5553

E-2 Hawkeye

Walk Around 53

Ken Neubeck

Color Series

Squadron Signal Publications

Don Greer 2008

E-2 Hawkeye

Walk Around 53

Ken Neubeck

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(Front Cover) An E-2C Hawkeye gets ready to be launched from USS *Theodore Roosevelt* (CVN 71). This aircraft, serial number 4496, has been retrofitted with the new eight-blade propeller upgrade.

(Back Cover) E-2C Hawkeye NF600, of "Liberty Bells" Carrier Airborne Early Warning Squadron 115 (VAW-115), Carrier Air Wing Five (CVW-5), flies from her sea home, the *Kitty Hawk* (CV 63).

(Preceding Page) E-2C Hawkeye 165507 makes a refueling stop. *(John A. Gourley III)*

About the Walk Around/On Deck Series

The Walk Around/On Deck series is about the details of specific military equipment using color and black-and-white archival photographs and photographs of in-service, preserved, and restored equipment. "Walk Around" titles are devoted to aircraft and military vehicles, while "On Deck" titles are devoted to warships. They are picture books of 80 pages, focusing on operational equipment, not one-off or experimental subjects.

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Introduction

The E-2 Hawkeye is the first U.S. Navy aircraft that is carrier-based and designed from the outset to fill the all-weather airborne early warning mission; it continues this mission to the present through periodic modifications.

With the improvements of airborne radar design during the 1950s, the concept of an early warning and command and control aircraft developed. The Grumman E-1 Tracer, a variant of the anti-submarine aircraft Grumman S-2 Tracker, first performed this mission and was designed with a large fixed dome structure housing the radar antennas. The E-1 performed this mission up to 1964 when it was succeeded by the new E-2 Hawkeye design built by Grumman at its Bethpage facility in Long Island, New York, and later at its Calverton, Long Island, facility.

The E-2 is a twin-engine, high-winged aircraft with target-tracking antennas contained inside a 24-foot rotating dome situated above the aircraft. In 1967, the first of 59 E-2A models were delivered to the Navy, but with new technology leading to new computers, most of these would be upgraded to the new E-2B standard. Shortly after the E-2B upgrade, Grumman began production of the new E-2C model that included significant improvements to the avionics and the inclusion of more powerful engines. Since the introduction of the E-2C model in 1972, there have been five major modifications of this model up to now involving upgrades to the radar, new engines, new computers, and other modifications, including the introduction of a new propeller design. Active-service E-2C fleet size runs about 63 aircraft.

The E-2C has been an important aircraft during a number of conflicts involving the United States during the past three decades. It had its combat debut in the Vietnam War. E-2C aircraft provided surveillance support during joint strike attacks against terrorist-related targets in Libya in 1986. During Operation Desert Storm, the aircraft provided command and control support for carrier-based fighter aircraft against enemy aircraft. The aircraft has provided similar support during the recent conflicts in Bosnia, Afghanistan, and Iraq.

In addition to war service, the versatile E-2C has been used by the U.S. Coast Guard in patrolling the U.S. coasts as well working with U.S. law enforcement agencies in drug traffic interdiction. In addition, the E-2C has been exported to several countries worldwide, including Egypt, France, Japan, Israel, Mexico, Singapore, and Taiwan.

The E-2C is capable of detecting targets anywhere within a 3 million-cubic-mile surveillance envelope while simultaneously monitoring maritime traffic. The aircraft is capable of tracking more than 600 targets and controlling more than 40 airborne intercepts.

A new version of the Hawkeye, with the designation E-2D, is in prototype with full production to begin in 2010 at the Northrop Grumman facility in St. Augustine, Florida, ensuring that the Hawkeye will be in service for many years to come.

Acknowledgements

Walk Around books typically require two aircraft or more for detailed photographing. I would like to thank Josh Stoff, curator of the Cradle of Aviation Museum, Mitchel Field, Long Island, for the use of the museum's E-2C aircraft as well as Evelyn Waters and the Air Victory Museum, Lumberton, New Jersey, for the use of its E-2B aircraft. Additional help was provided by Mike Allegre, Dave Conroe, John Golden, John A. Gourley III, André Jans, Ray Neubeck, Eric Pajaud, and John Zollo as well as the U.S. Navy and Northrop Grumman.

During the 1950s, Grumman built the S-2 Tracker, which was used for anti-submarine warfare (ASW). It would be the basic frame for the E-2 Hawkeye. *(Ken Neubeck)*

In the 1960s, Grumman built the E-1 Tracer, which had a design that evolved using the same basic airframe as the S-2 tracker. The design included the addition of a large fixed elliptical dome structure located on top of the aircraft. *(Grumman archives via Cradle of Aviation)*

The Grumman E-2 Hawkeye was developed for the U.S. Navy during the 1960s with a circular rotating dome in lieu of the fixed dome used in the E-1 Tracer design. *(André Jans)*

The first E-2D Advanced Hawkeye aircraft is undergoing construction at the Northrop Grumman facility in St. Augustine, Florida. *(Northrop Grumman)*

From the *Kitty Hawk*, an E-2C aircraft is launched during maneuvers in the Pacific Ocean in May 2004. *(U.S. Navy Photo by Photographer's Mate 3rd Class Jason T. Poplin)*

An E-2C Hawkeye is being launched by a steam-powered catapult from the *Nimitiz* (CVN 68) while on training exercises in the Pacific Ocean in December 2004. Note the F/A-18 Hornet in the foreground taxiing into position. *(U.S. Navy Photo by Airman Natalia Panneta)*

An E-2C Hawkeye aircraft prepares to land on the *Harry S. Truman* (CVN 75) with the arresting hoo extended from the rear of the aircraft. *(U.S. Navy Photo by Airman Patrick Copeland)*

An E-2C Hawkeye has been signaled to turn on its engines during evening flight operations on th flight deck of *Harry S. Truman* during operations in the Persian Gulf in December 2004. Carrier group provide surveillance and reconnaissance missions over Iraq. *(Department of Defense Photo by Airma Ryan O'Connor)*

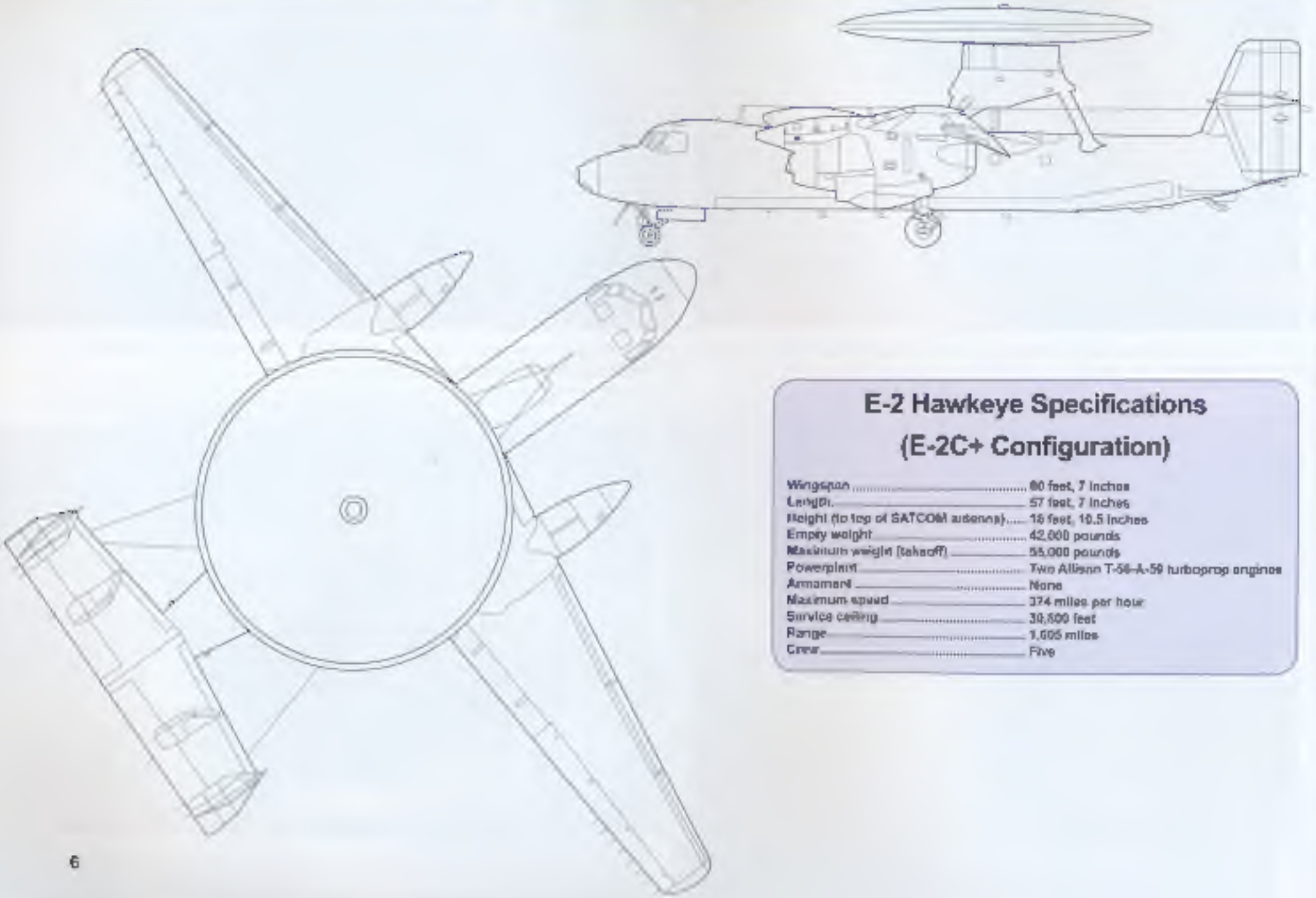
Ground crew workers prepare an E-2C Hawkeye for takeoff during nighttime carrier operations. *(Northrop Grumman)*

Two Hawkeyes in the stowed position are on the flight deck of *Kitty Hawk*. *(U.S. Navy Photo by Photographer's Mate 3rd Class John E. Woods)*

Three E-2C Hawkeyes with the eight-blade propeller modification are tied down to the flight deck of *Dwight D. Eisenhower* (CVN 69). *(U.S. Navy Photo by Specialist 2nd Class Miguel Angel Contreras)*

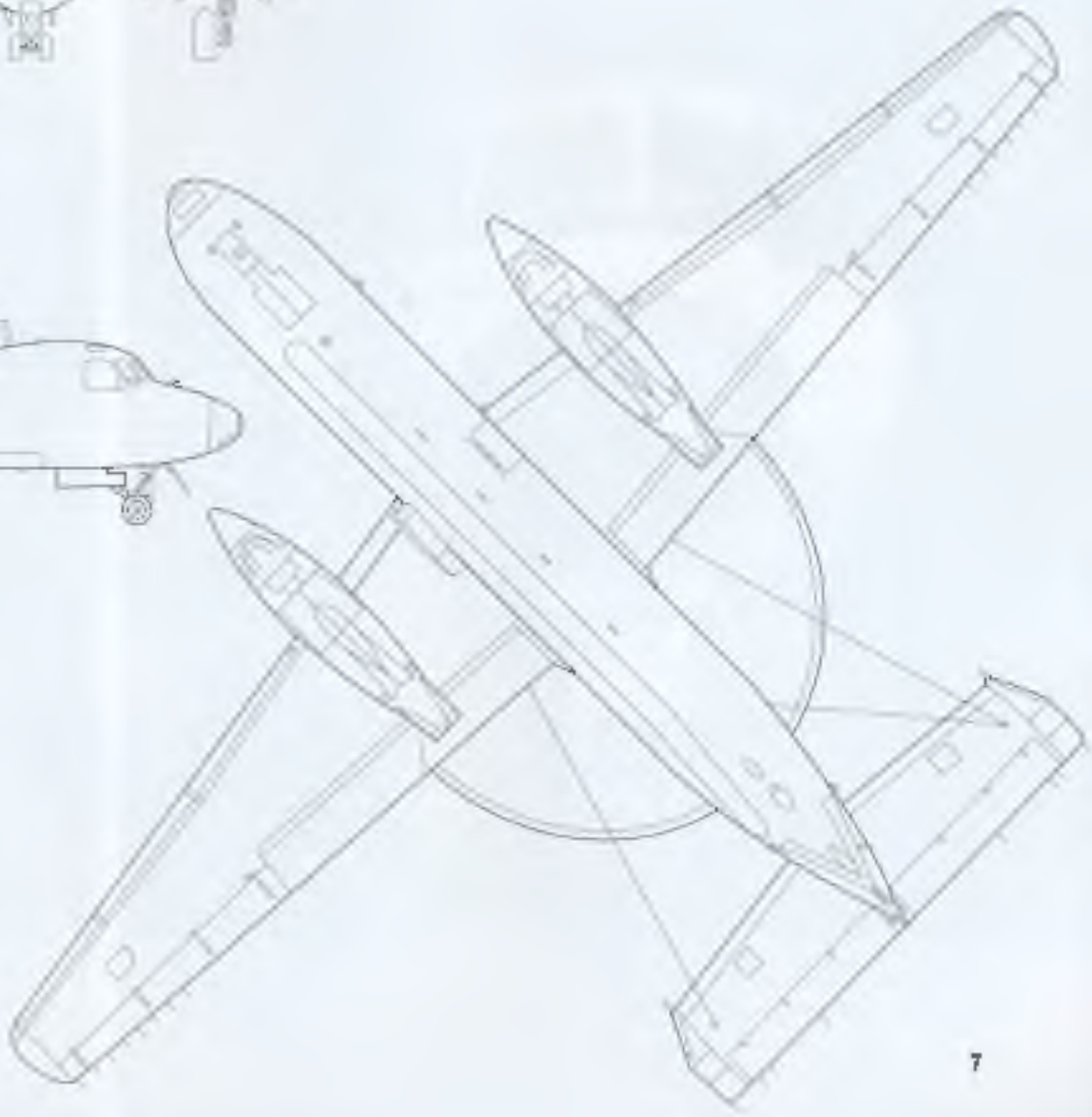
An E-2C Hawkeye catches an arresting wire with the arresting hook assembly on the aircraft carrier *Enterprise* (CVN 65). *(U.S. Navy Photo by Photographer's Mate 3rd Class Milosz Reterski)*

Grumman E-2C Hawkeye



E-2 Hawkeye Specifications
(E-2C+ Configuration)

Wingspan	80 feet, 7 inches
Length	57 feet, 7 inches
Height (to top of SATCOM antenna)	18 feet, 10.5 inches
Empty weight	42,000 pounds
Maximum weight (takeoff)	55,000 pounds
Powerplant	Two Allison T-56-A-59 turboprop engines
Armament	None
Maximum speed	374 miles per hour
Service ceiling	30,600 feet
Range	1,605 miles
Crew	Five



The main difference in the external appearance between the E-2B and the E2-C Hawkeye model is in the front nose structure. For the E-2B model that is pictured above, the two taxi lights are installed in the nose, along with two draining ports that are located beneath the lights. *(Ken Neubeck)*

For the E-2C model, like this one from the carrier *Kitty Hawk*, the two taxi lights have been moved to inside the nose behind a window. The nose area where the cross is located is used for the antennas of the passive detection system (PDS). *(U.S. Navy Photo by Photographer's Mate 3rd Class Todd Frantom)*

The nose section of E-2B aircraft is fixed into the aircraft. The two taxi lights and the three-light panel are serviced by removing the mounting brackets that surround them. *(Ken Neubeck)*

This view of the nose section shows a blade antenna, two drainage structures, and two tie-down rings located on the lower portion. *(Ken Neubeck)*

By contrast, the E-2C nose section can be being hinged upward with the release of two latches located on the bottom portion. This allows quick access to the PDS antennas and the taxi lights, which shine through the window located beneath the black section. *(Ken Neubeck)*

The inside of the nose section for the E-2C shows metal spars, a glass window area for the taxi lights, and an elliptical fiberglass section for the PDS antenna signals to go through. Note the deicing lines that go to the edge of the window. *(Ken Neubeck)*

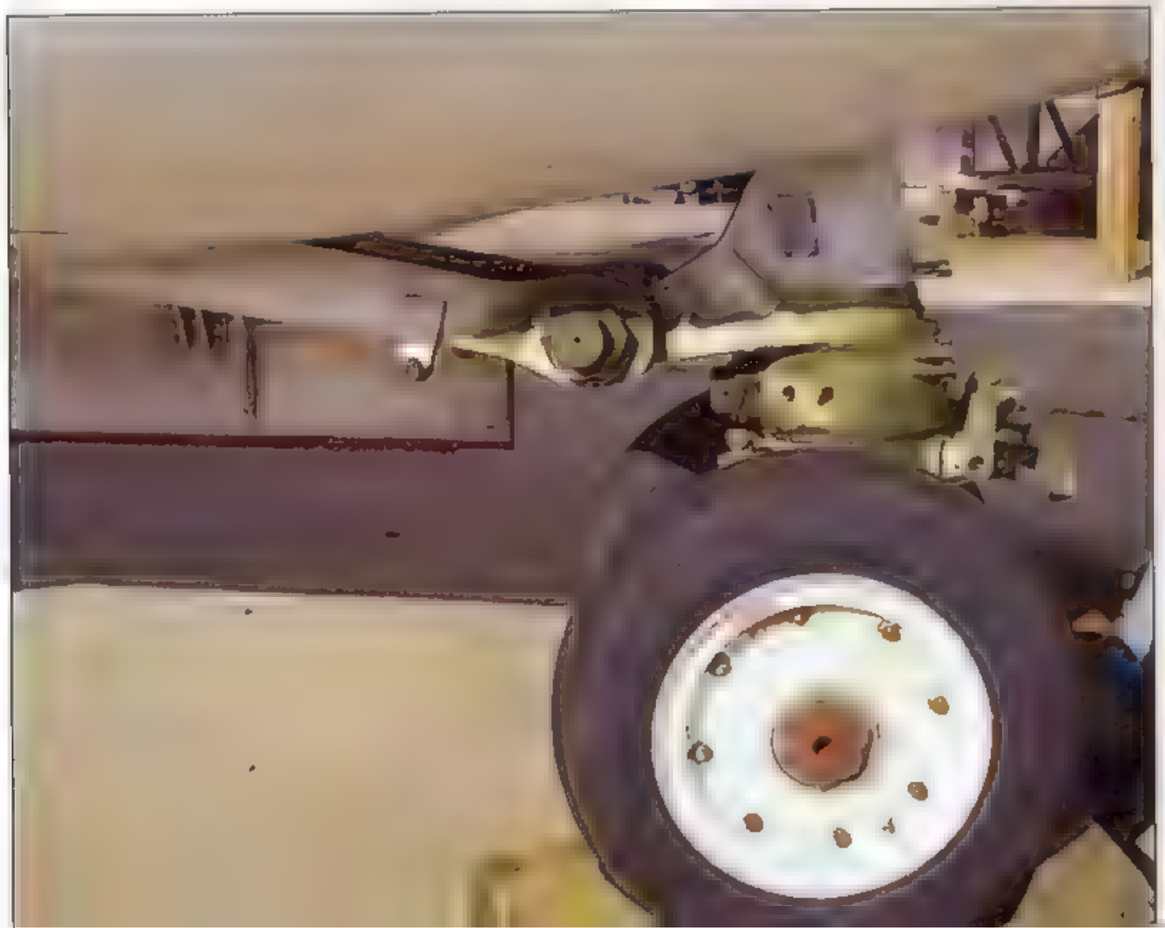
The large white strut that is connected to the nose landing gear assembly is the nose undercarriage strut that pulls in the landing gear during flight. The nose undercarriage door is seen on the left. Both the nose landing gear and the main landing gear design has remained consistent throughout the different E-2 configurations. *(Ken Neubeck)*

View from the left side of the nose landing gear shows the door in the open position. Note the numerous access doors located on the fuselage that are used for accessing various linkages. *(Ken Neubeck)*

A large forklike strut connects to the undercarriage strut on the nose landing gear. This is part of the retraction process during landing. Note the markings for the UHF/ADF antenna are located behind this strut. *(Ken Neubeck)*

A view from the right side of the nose landing gear. Located above the gear on the fuselage are numerous small access doors for linkage access along with a few ground connection attachments *(Ken Neubeck)*

This close-up view shows the nose landing gear wheel and tire. Tire pressure for the nose landing gear tire is 140 pounds per square inch (psi) for land operations and 260 psi for carrier operations *(Ken Neubeck)*



This is the view from behind the front door of the nose landing gear. A pair of pushrods that extend from the fuselage drives the door open when the nose landing gear is extended. Some associated landing gear wiring is routed down the middle of the rear door section. *(Ken Neubeck)*

Side view of the nose landing gear shows the nose wheel steering unit located in the middle and front part of the strut. This unit is controlled by the pilot through the use of a handle located on the left side of the main instrument panel in the cockpit. *(Ken Neubeck)*

A machined extrusion extending from the front of the nose landing gear is used to connect to the catapult launch mechanism on the aircraft carrier. *(Ken Neubeck)*

A ground crew member prepares an E-2C for takeoff by extending the catapult link arm from the nose landing gear to the catapult launch mechanism on the deck of the carrier. *(U.S. Navy Photo by Photographer's Mate 3rd Class Angel G. Hilbrands)*

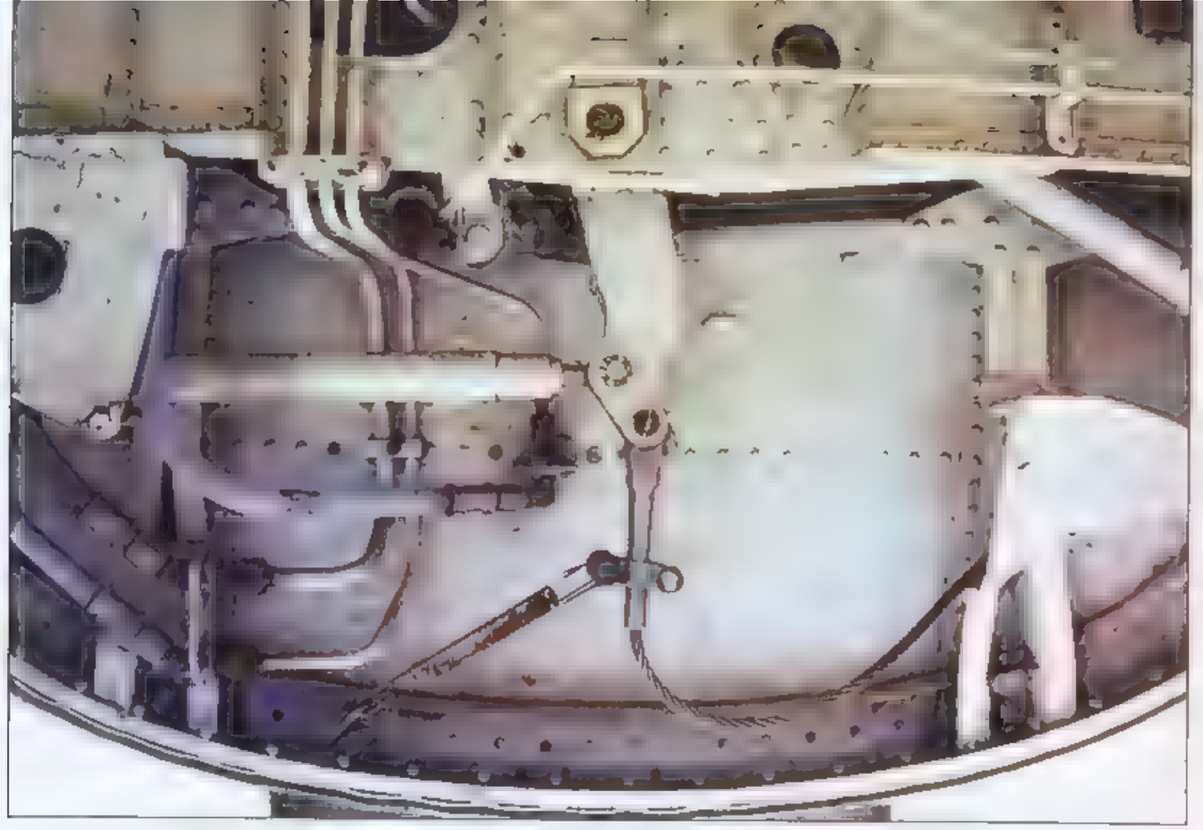
A maintenance mechanic from the *Theodore Roosevelt* greases the linkages of the nose wheel steering unit of the nose landing gear. *(U.S. Navy Photo by Photographer's Mate Airman Javier Capella)*

This side view of the main landing gear shows the various springs and linkages that connect to the main landing gear strut. The main landing gear actuator is located in between the linkages *(Ken Neubeck)*

This close-up view shows where the main landing gear actuator connects to the inside well of the fuselage. Hydraulic lines ride along the actuator. The dual-spring assembly that is located to the right of the actuator is connected directly to the main landing gear strut. *(Ken Neubeck)*

The rear view of the right main landing gear in tie-down mode. Ground crew workers have to take extra precaution when working in the area of the main landing gear because of the propeller in the front and the jet blast exhaust in the rear of the landing gear fairing. As a result, numerous warning markings are located around the structure. The main landing gear door has been removed for maintenance *(Ken Neubeck)*

A close-up view of the wheel and tire of the main landing gear, along with an unobstructed view of the main landing gear actuator. Tires were typically made by Goodyear, and the recommended tire pressure for the main landing gear is set at 210 psi for land operations and 260 psi for carrier operations. Tires have to be able to undergo the stress of carrier touchdowns involving high speed and the shock from contact with the arresting line. *(Ken Neubeck)*



The linkage controls the main landing gear doors when the aircraft is in flight. *(Ken Neubeck)*

This view from inside the front portion of the left main landing gear shows the propeller warning is painted on the inside of the main landing gear door section. *(Ken Neubeck)*

A rear-view shot of the right main landing gear. Note the set of linkages that connect the main landing gear door panels to attachment points located on the landing gear strut. Also note how the hydraulic lines are routed on the main landing gear strut. *(Ken Neubeck)*

This close-up view of the right main landing gear shows the strut and linkage attached to it in the rear portion. The ram-air cooling vent, shown with a red cover, is located on the right side of the fuselage only, just under where the wing meets the fuselage. This vent is used for cooling the avionics. *(Ken Neubeck)*

This inside view toward the rear of the right main landing gear shows the two sets of doors on either side of the gear that close during flight. *(Ken Neubeck)*

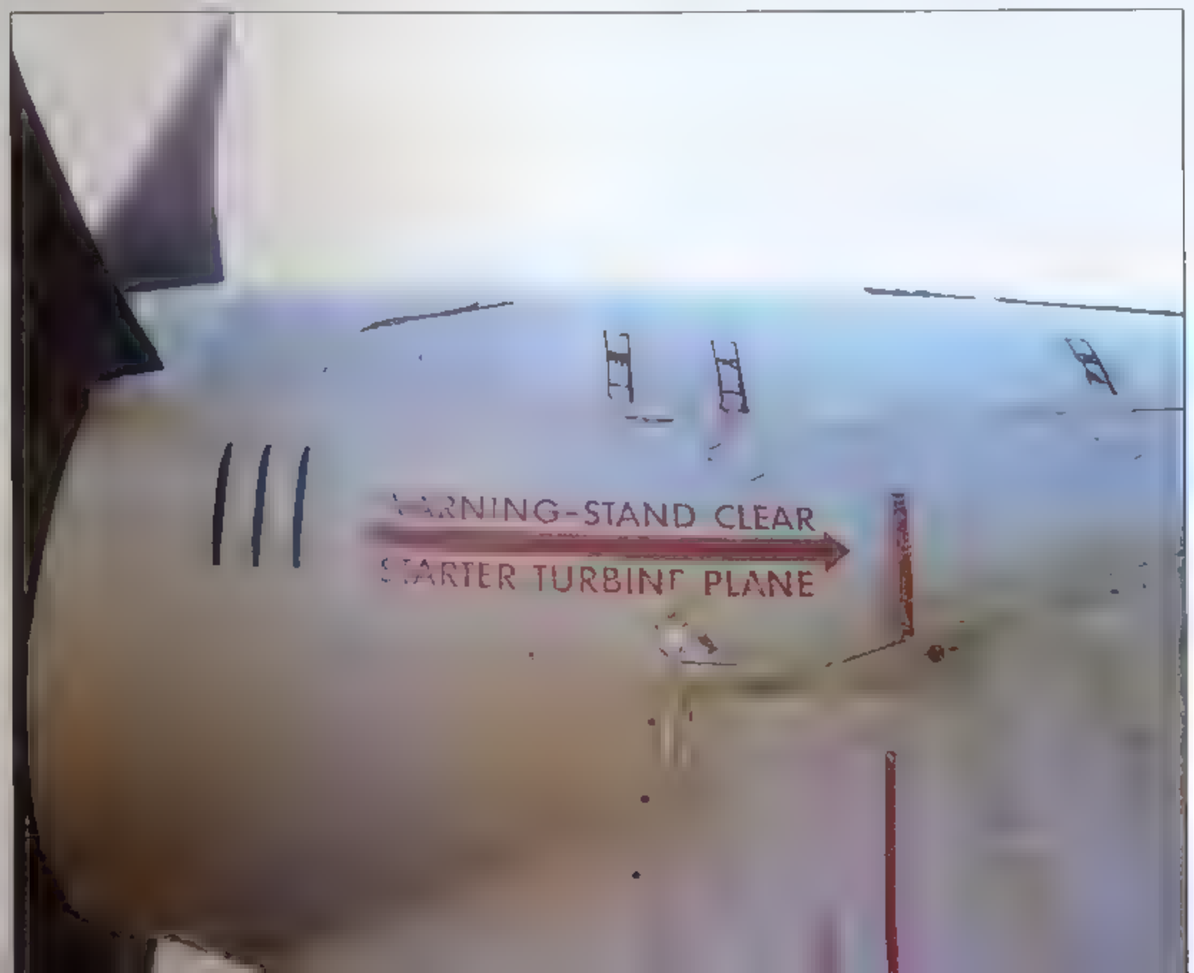
Front view of the left main landing gear wheel well area shows the landing gear actuator and the inside walls of the landing gear well where some of the hydraulic lines can be seen. *(Ken Neubeck)*

E-2C aircraft serial number 4496 is undergoing a washing on the deck of the *Theodore Roosevelt* while the carrier is docked in Port Everglades in Fort Lauderdale during fleet week. This aircraft has been retrofitted with the new eight-blade propeller upgrade. (See a painting of this aircraft on the front cover.) *(John A. Gourley III)*

The two engine nacelle assemblies on each E-2 aircraft are part of the main landing gear pod. This view of the right engine nacelle shows the two main inlet ports. The circular one provides the cooling for the compressor section of the engine, and the oblong port is the inlet for the oil cooler. *(Ken Neubeck)*

A close-up view of the oil cooler intake section on the lower part of the engine nacelle. *(Ken Neubeck)*

Access to both engines is done through the use of quick-release latches that are located on the top of the nacelle section, behind the propeller. *(Ken Neubeck)*



The propellers for the E-2C aircraft were made by Hamilton Standard and feature feathering control capabilities in which the pitch of the blades can be changed inside the rotor hub through controls in the cockpit. *(Ken Neubeck)*

Maintenance personnel install a propeller on an E-2C aircraft. The rotor assembly and parts of the feathering control can be seen with the cover off. *(U.S. Navy Photo by Photographer's Mate Airman Apprentice Timothy C. Roache Jr.)*

On the inside part of each engine nacelle, there is a quick-release access door for hydraulic system servicing. The door is the trapezoidal panel on the right nacelle. *(Ken Neubeck)*

The access door for the hydraulic system servicing has two quick-release screws at the top of the panel. The two filler caps are where NATO-grade hydraulic fluid is pumped. *(Ken Neubeck)*

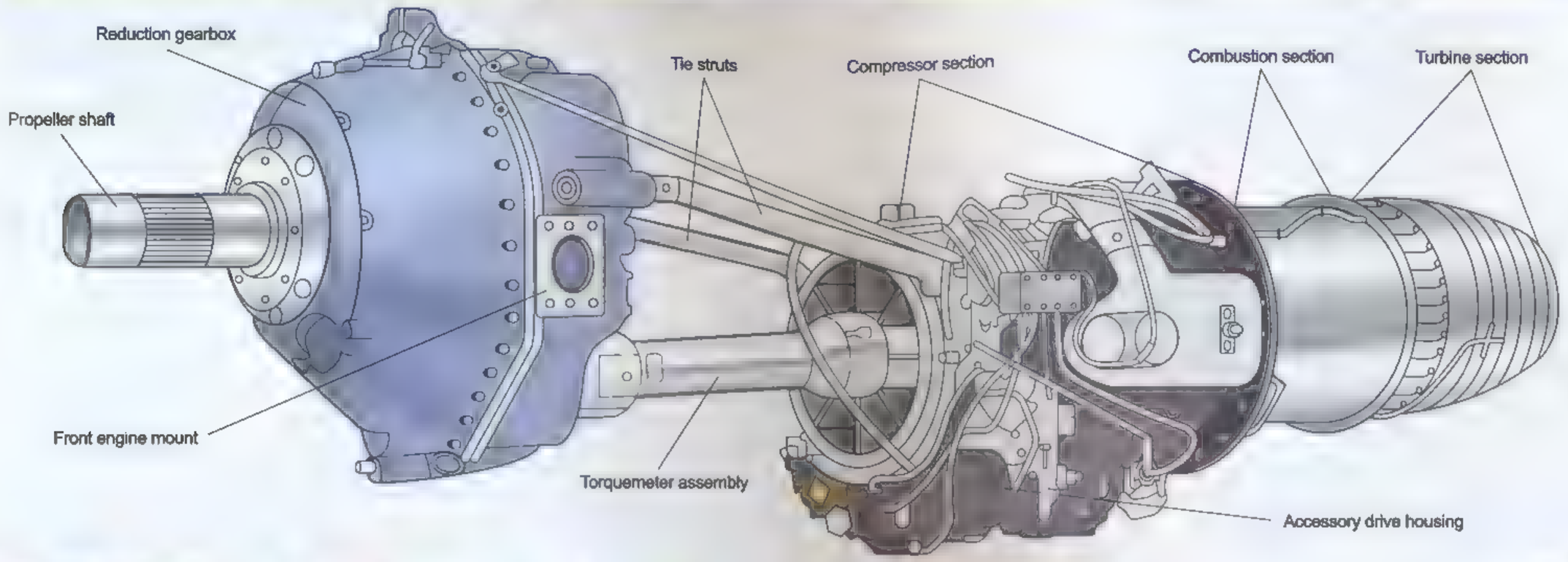
The original design of the E-2 Hawkeye featured two sets of four-blade propellers that could be feathered by the pilot through a control knob in the cockpit Propellers are painted black on the front part of the blade with standard warning markings of red and white painted on the tips of each blade *(Ken Neubeck)*

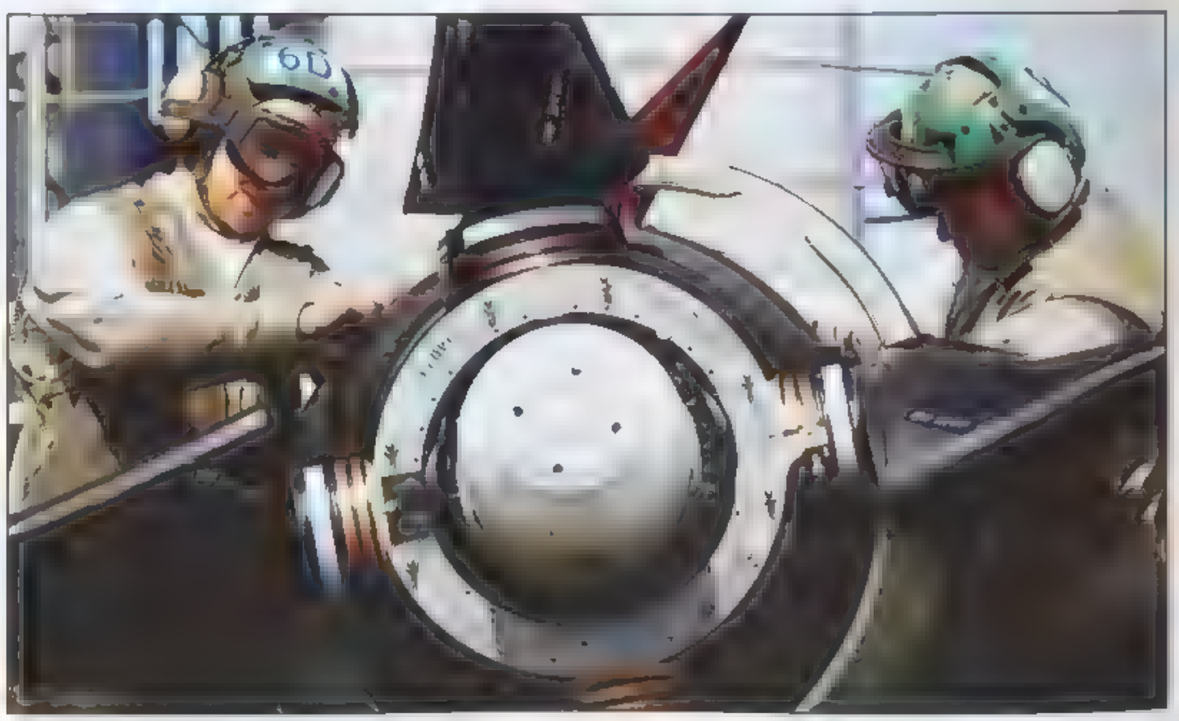
This E 2C is on static display during a 2004 air show at Naval Air Station Oceana Virginia This aircraft features the new eight blade propeller that replaces the original four blade propeller The new propellers will improve flying performance Note the protective cover assembly that is held together by cables and is attached to the tips of each blade *(U S Navy Photo by Photographer's Mate 2nd Class Daniel McLain)*

An E-2C Hawkeye pilot conducts preflight checks on the aircraft. A red warning stripe goes completely around the E2 aircraft in order to alert both the pilot and maintenance personnel about the proximity of the propeller. *(U.S. Navy Photo by Photographer's Mate 3rd Class James R. McGury)*

The propeller-warning message is painted on both the left and right sides of the aircraft. Similar warnings are posted inside the main landing gear doors. Note that the ram air assembly for the cooling vapor cycle is behind the red line for this E-2B aircraft. Also note that there is an extrusion that is located in front of the ram air inlet. This is not a blade antenna, but rather it is an attachment point for the fixed HF antenna. *(Ken Neubeck)*

T-56-A-427 Turboprop Engine





Two aviation machinists perform maintenance on the propeller on one of the engines of an E-2C assigned to the *Harry S. Truman* during Iraqi Freedom operations. *(U.S. Navy Photo by Photographer's Mate Airman Ricardo J. Reyes)*

The C-2 Greyhound aircraft uses many of the same basic components as the E-2 aircraft. One of the access doors is opened on the engine of a C-2 aircraft, showing the tie struts and other components. *(Thomas Urbild)*

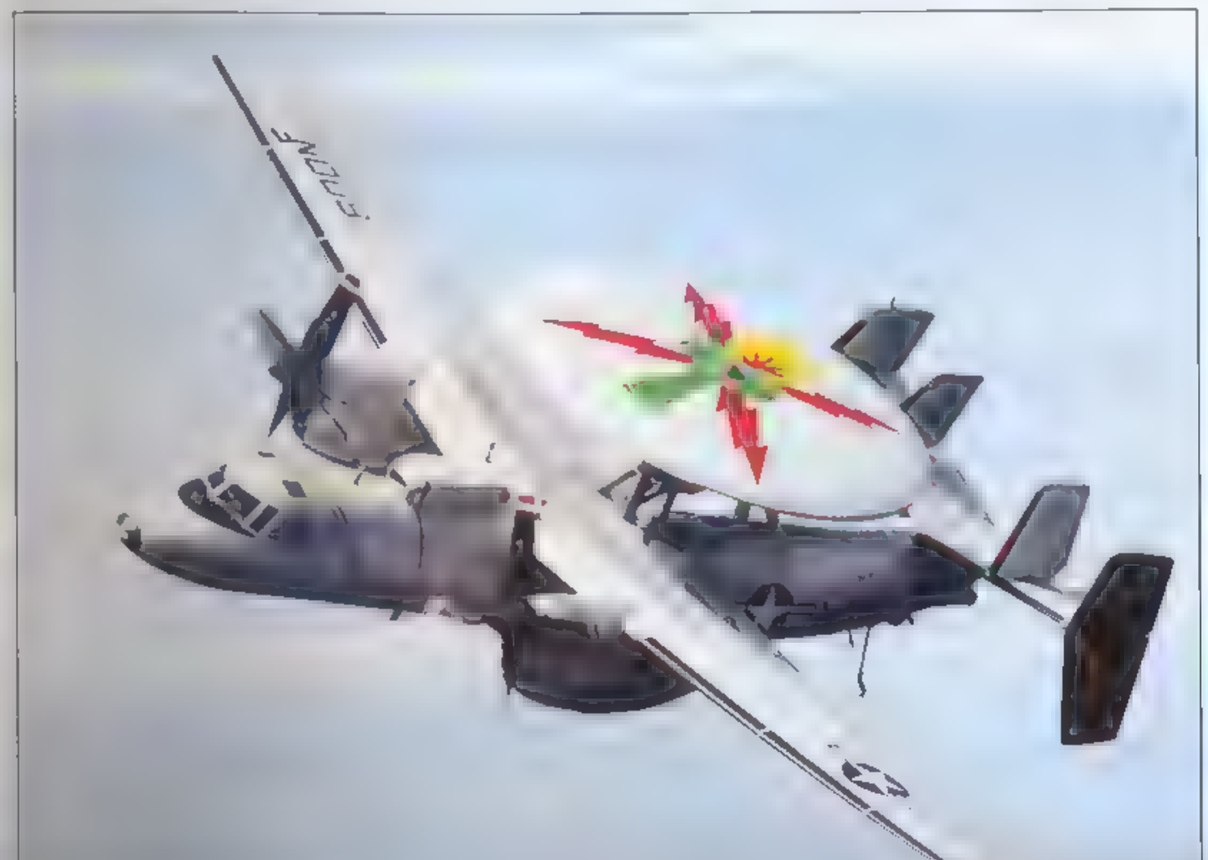
A close-up view of the intake section into the compressor section of the engine Both the shaft and the blades of the compressor can be seen. *(Ken Neubeck)*

The rear view of the turbine section of the engine. The blades of the turbine and the exhaust chamber are visible. *(Ken Neubeck)*

A VAW-123 "Screwtops" E-2C Hawkeye flies during an aerial demonstration at the Naval Air Station Oceana Air Show in September 2004. *(U.S. Navy Photo by Photographer's Mate 2nd Class Daniel J. McLain)*

An E-2C Hawkeye 2000 flies in the clouds. The E-2C Hawkeye 2000 variant, the new upgrade version of the E-2C, has significant improvements of displays, navigation, and computers. *(Northrop Grumman)*

This Japanese E-2C Hawkeye is parked with the wings in the stowed position. E-2C's have been in service with foreign countries since the late 1970s. (See her color profile on page 79.) *(André Jans)*



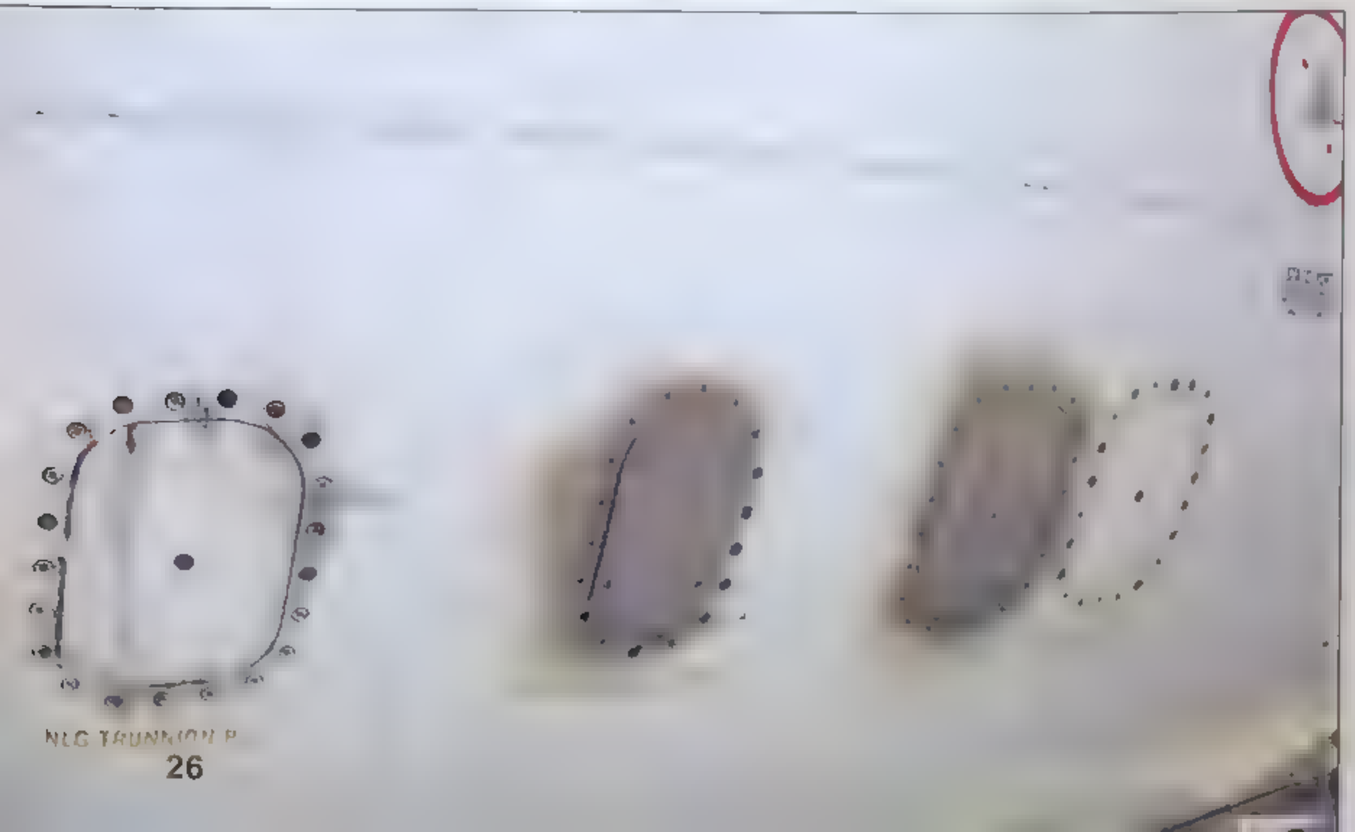
An E-2C Hawkeye from the *Kitty Hawk* performs a flyover in September 2006. Note the special markings on top of the radar dome. (See her color rendering on the back cover.) *(U.S. Navy Photo by Seaman Stephen W. Rowe)*

This overview shot of the activity on *Dwight D Eisenhower* in September 2006 shows an E 2C Hawkeye ready to be launched by the catapult system with F 18 aircraft next in line There is another E-2C aircraft to its right in front of the catapu t surface, that is in the process of having its wings moved to flight position Two C-2A Greyhounds and another E-2C Hawkeye are parked near the edge of the carrier. The fuselage design of the C 2A Greyhound is similar to the E-2C Hawkeye; the Greyhound is used for transport operations *(U.S Navy Photo by Mass Communication Specialist 2nd Class Miguel Angel Contreras)*

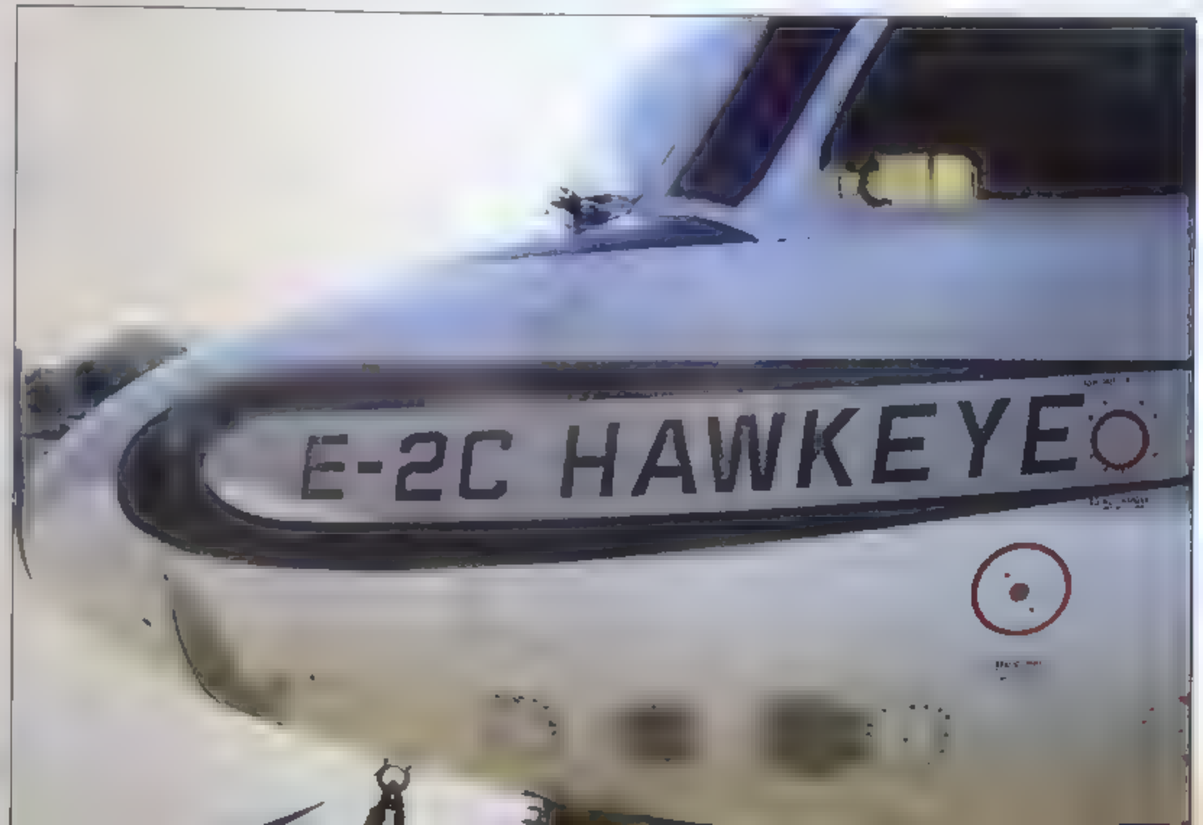
The front windshield section of the E-2C consists of two flat sheet glass windows, along with windshield wipers that pivot from the outside portion of the windows. *(Ken Neubeck)*

Another flat sheet glass piece is next to the front windshield section, and a contoured piece of glass is on the side. Note that all glass pieces are tinted. *(Ken Neubeck)*

This close-up view shows maintenance access to the nose landing gear trunnion pin, the nose land gear steering mechanism, and other linkages for the landing gear. *(Ken Neubeck)*



On the left side of the front fuselage, in the lower portion, there are a number of access panels and two circular panels for ground connections outlined in red. *(Ken Neubeck)*



The right side of the front fuselage is similar to the left side, with several access doors in the lower part of the fuselage that access various linkages in the nose landing gear. *(Ken Neubeck)*

The pilot and the co-pilot from an E-2C aircraft look out through the top window area of the cockpit The w ndows are removable from the inside of the cockpit *(U S Navy Photo by Mass Communication Specialist Seaman Joshua Wayne LeGrand)*

The side window on the cockpit is different from the front windows with more reflective characteristics Note that the commander's name is placed under the window for active aircraft in service *(U S Navy Photo by Photographer's Mate 3rd Class Angela Virnig)*

Another view of the front fuselage section shows the windows, nose landing gear, red warning stripe for the propeller, and the crew access door in the open position. *(John A. Gourley III)*

Access to the cockpit and cabin area is gained through this access door that is located on the left side of the fuse age, near the center of the aircraft. *(Ken Neubeck)*

Access is gained by gripping onto the horizontal handle on the door while pulling the exit release lever downward to the unlock position *(Ken Neubeck)*

The door is fully opened with the aid of the dual inkage and stainless steel wire that is located on the right side of the door. *(Ken Neubeck)*

Immediately on the left side of the door upon entering, in front of a circuit breaker box, is the manual door release for the crew to open the door from the inside. *(Ken Neubeck)*

On the top of the entrance, from the inside, there is a handle for gripping onto when exiting the aircraft. Assorted wire bundles line the inside bulkhead walls and are attached to the spars by clamps *(Ken Neubeck)*

This view of the left side of the crew entrance shows the door release handle and the electrical circuit breaker panel located behind it. There are two warning decals on the panel area below the electrical panel. Note the pair of lighting switches that are located at the bottom. These switches are at this location so the crew can access them easily as they walk up the boarding steps to the aircraft. To the right is the hallway that leads to the front of the aircraft to the cockpit area. *(Ken Neubeck)*

From the crew entrance and moving toward the front of the aircraft, a narrow hallway leads to the cockpit area. For both the E-2B and E-2C model aircraft, two bays are located on the left consisting of radio equipment. The equipment used in the E-2B generally consisted of radios in black matted finish. At the entrance of the cockpit area, there is a door that is usually closed during flight. *(Ken Neubeck)*

Shown here from the E-2B aircraft are the left and right cockpit panels for pilot and co-pilot along with the center cockpit panel and center console. The pilot and co-pilot panels contain the standard flight instruments such as altitude, speed, and fuel quantity. The center cockpit panel contains additional flight instrumentation along with caution and advisory light panels. There is a pair of interconnected rudder pedals for each pilot as well as interconnected control wheels between the pilot and co-pilot, with flight control trim switches located on the inboard and outboard grip of each control wheel. The configuration of the different E-2 aircraft model cockpit differs primarily in the area of the center throttle control console with rearrangement of the throttle controls. *(Ken Neubeck)*

The cockpit panel for the E-2C is similar to the E-2B, and it has remained fairly consistent throughout the different E-2C configuration changes with only minor changes. Flight gauges are located on the front panel, and throttle controls are located in the center console. The handles for the control stick have been removed for maintenance. *(Ken Neubeck)*

A U.S. Navy pilot flies a Hawkeye over Afghanistan during Operation Enduring Freedom. The butterfly-style handle for the control stick is visible in this view. In Operations Enduring Freedom and Iraqi Freedom, E-2 Hawkeyes have provided critical airborne battle management and command and control functions *(U.S. Navy Photo by Photographer's Mate 1st Class Jim Hampshire)*

(Bottom left) Indicators that are located on the left side of the panel are unique functions for the pilot. In later updates, the dual row of instruments would be changed to vertical-style gauges *(Bottom middle)* The center console (middle two sections) is accessible to both the pilot and co-pilot. Panels include the test panel for emergency oxygen, along with controls for anti-icing, and overhead and external lighting. *(Bottom right)* The instrument panel for the co-pilot station contains those instruments needed to fly the aircraft *(Ken Neubeck)*

The configuration of the center console that is located between the pilot and co-pilot is significantly different between the E-2B and early-model E-2C aircraft. The E-2B console (shown above) has a series of control switches that are located above the throttle. In addition, the throttle controls have uniquely shaped handles for different functions and are located at different points in the console. Note that there are a series of panels at the base of the console as well. *(Ken Neubeck)*

The early-model E-2C model center console (shown above) is drastically different than the E-2B model center console. The various control switches that were previously located in front of the throttle controls are now located behind the throttle. In addition, the throttle handles have been changed to different shapes and are located side by side. Later E-2C models, such as E-2C+, have center consoles that revert to a configuration that is similar in layout to the E-2B model version. *(Ken Neubeck)*

A large fuse box panel is located on the overhead console between the pilot and co-pilot and includes other electrical system functions. Rearview mirrors are located on each of front windows. *(Ken Neubeck)*

Two overhead windows in the cockpit can be opened from the inside through a manual mechanism. Note the portable light that is hanging from the frame on the pilot side. A similar one is also on the co-pilot side. *(Ken Neubeck)*

A center spar separates the two tinted windshield sections. Hanging off the overhead console is a compass. *(Ken Neubeck)*

Both the pilot and co-pilot have a pair of rudder control pedals situated at their feet. The pedals are similar for both B and C model configurations. The pedals are forgings with the Grumman name imbedded on top. *(Ken Neubeck)*

On the E-2C, located to the left of the pilot is a console that contains the panel lighting control, along with controls for the propeller, wing, and tail pitch. A cup holder is to the far left. Located above the console is the handle for nose wheel steering. *(Ken Neubeck)*

For the same left console area on a later-variant E-2C, the same controls are placed, although switching has been simplified from single-function switches to multiposition rotary switches. Located above the console is the handle for nose wheel steering *(Ken Neubeck)*

Directly to the left of the pilot in the E-2C are more control switches, including the emergency oxygen indicator. To the far left is a map case. *(Ken Neubeck)*

On the right side of the co-pilot are control panels for the ventilation fan and ignition control. The large circular knob pulls in and out for feathering and unfeathering the propeller. *(Ken Neubeck)*

The co-pilot seat with only the bottom cush on installed Note the standard rivet-style construct on The small control lever on the eft side of the seat s used for swivel control On the right side of the window is a strap for hanging up the emergency oxygen mask for the co-pilot. *(Ken Neubeck)*

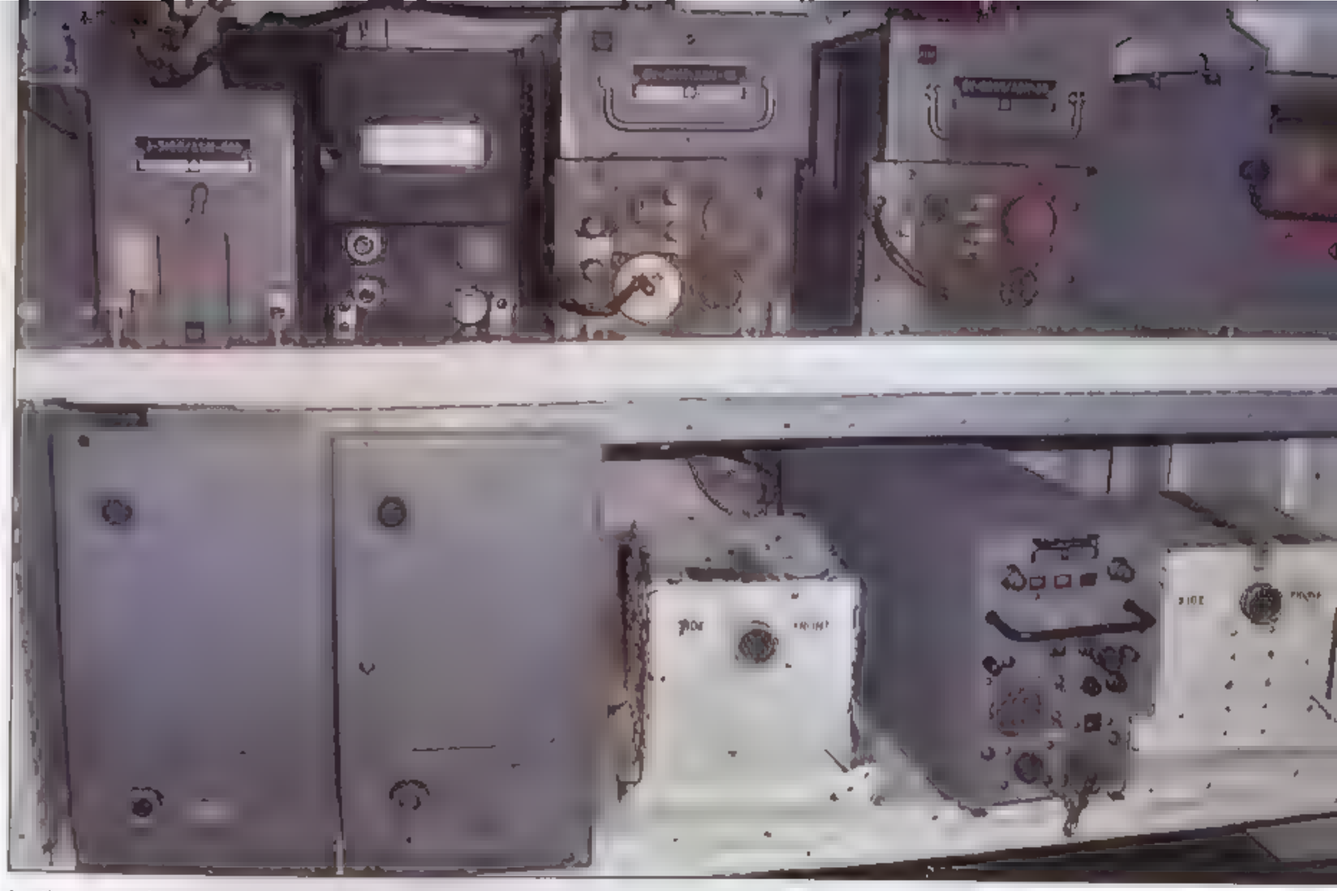
Th s view of the rear of the co-pilot seat shows some of the springs and linkages Located behind the co-pilot seat is the e ectnca. system ,unction box that has two sets of switches attached to the outs de of the box one for red dome lighting and the other for ground bypass control *(Ken Neubeck)*

This view of the pilot seat shows the green cushion that is located on the backrest, along with a series of restraining straps. Note the oblong metal handle located toward the right that is used for quick release of the restraining straps *(Ken Neubeck)*

The headrest for the pilot seat is constructed of soft foam covered by leather. *(Ken Neubeck)*

The headrest for the co-pilot seat is shown with a red covering. Behind the co-pilot seat is an electrical junction box. *(Ken Neubeck)*

Located on the left side of the E-2C aircraft, in the equipment bay behind the pilot, is a four-shelf section. On the top shelf are three HF radios with the remaining shelves dedicated to tactical air navigation (TACAN) equipment and signal processor boxes. It is important to note that much of the equipment located on these shelves changed throughout the different E-2 configurations. *(Ken Neubeck)*



In the next bay on the left side of the aircraft, there is a four-shelf section. On the top shelf, there are similar boxes as seen in the previous bay with interconnect boxes and altitude reference system boxes. On the second shelf, there are a number of electronic boxes and radios. *(Ken Neubeck)*

The bottom two shelves contain various switching boxes and an emergency oxygen tank painted in green. Note that there are switch guards applied to the boxes on the third shelf to prevent accidental switch selection by personnel passing by. *(Ken Neubeck)*

Located in the next bay on the left side of the aircraft behind the pilot is a five-shelf rack containing various radio equipment. On the top shelf shown above are three interconnect boxes that are used for switching between systems. The second shelf contains an identification friend or foe (IFF) radio beacon transmitter, and the third shelf contains two HF radio-transmitter pairs. *(Ken Neubeck)*

Below the shelf holding two HF radio transmitter-receivers are two black boxes that are dedicated to the pitot static system. On the bottom shelf is the side-looking airborne surveillance radar receiver made by General Electric. The radar system for the E-2C was upgraded several times to newer models over the course of the aircraft's service. *(Ken Neubeck)*

On the left side of the aircraft, just past the crew access door, there is a series of large electronics boxes. Below the portable fan are the detector processor, then the digital signal converter, and the large box at the bottom that consists of a number of components for the IFF receiver/transmitter system. *(Ken Neubeck)*

Located in the electronics bay on the right side of the aircraft behind the co-pilot is a series of panels with quick access doors for servicing the equipment of the APS-138 radar system used in this particular E-2C aircraft. At the top of these panels is a Nixie-tube multimeter and power supply with a switch guard plate attached to it. *(Ken Neubeck)*

A close-up view of the detector processor and digital signal converter that is located next to the crew entrance. Because of the weight of this equipment, it requires at least two maintenance personnel to carry it in and out of the aircraft. *(Ken Neubeck)*

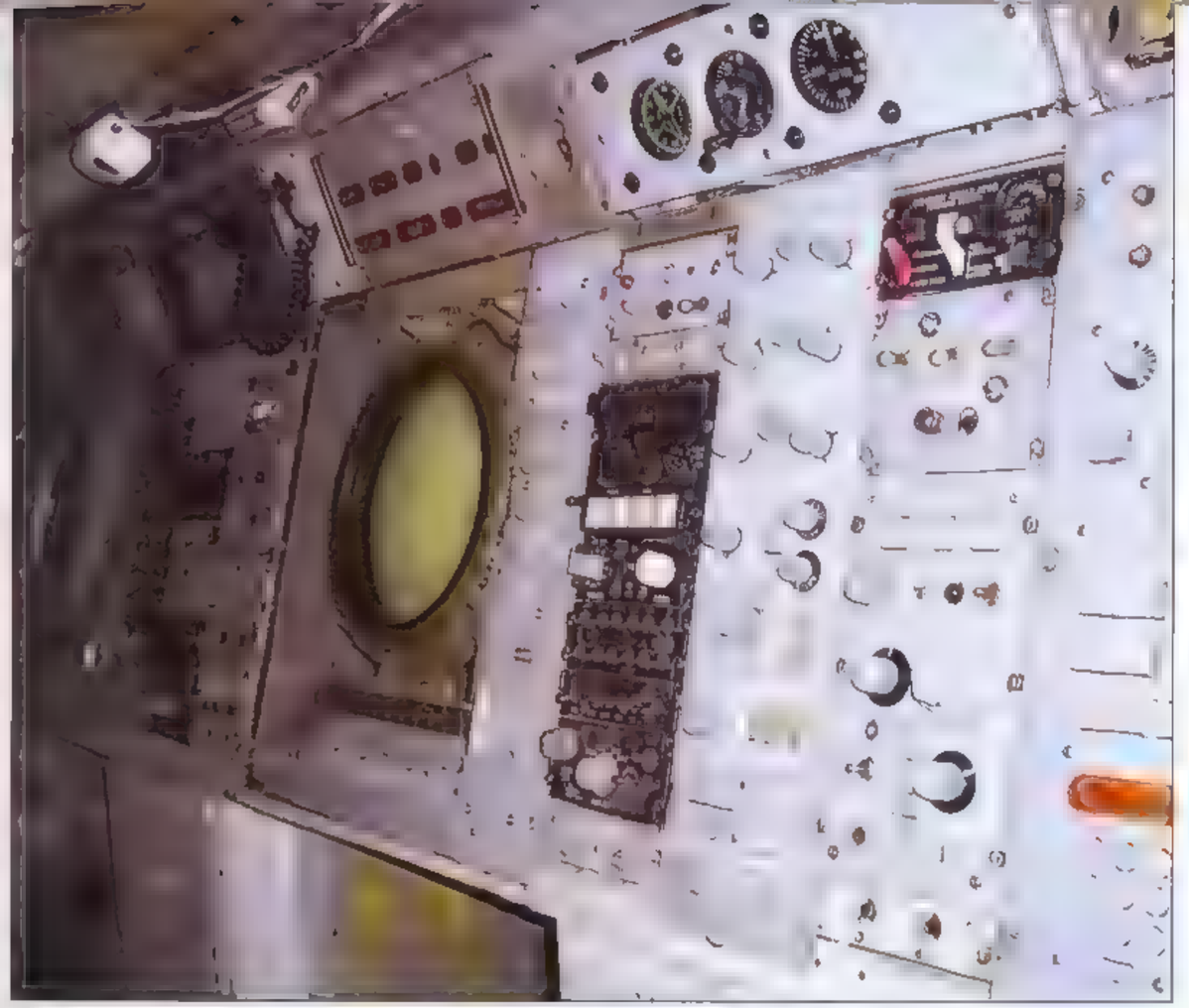
Directly across the cabin entrance is a bay that contains a number of signal conditioners that are part of the APS-125 radar system for this particular E-2C aircraft. *(Ken Neubeck)*

Just to the right of the components of the APS-125 radar system in the next bay there is a large series of tanks, gauges, lines, and valves. The large amount of equipment includes the heater, evaporator, refrigerator units, and cabin pressure equipment. The E-2 aircraft requires significant amounts of time by ground maintenance to keep the aircraft mission ready. *(Ken Neubeck)*

Located on the right side of the aircraft, prior to entering the last section of the aircraft containing the three operators, are the various panels that contain junction boxes, AC power and DC power distribution circuitry, and wiring. Each panel is actually a drawer that is secured into the frame via several screws. *(Ken Neubeck)*

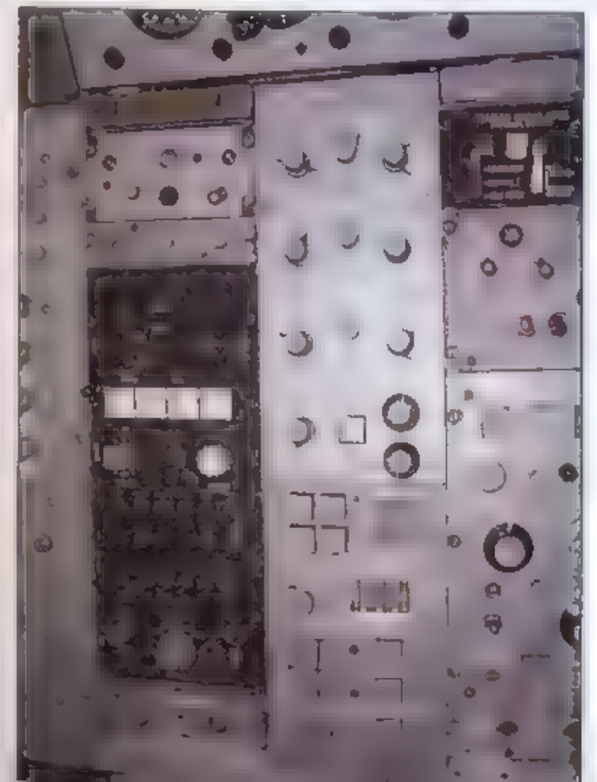
Approaching the rear of the aircraft, a large bay area is on the right side that is used for the computer and signal processing equipment. The equipment above is for the E-2B model aircraft, and it would be updated several times for the E-2C model aircraft. *(Ken Neubeck)*

The last section of the E-2 Hawkeye cabin contains the three operator stations (air controller, combat information officer, and radar operator). Entering this section, the crew seats are situated on the left side of the room, while the electronic equipment is situated on the right side. At the rear of the room is a gray door that opens to the toilet. To the left of the door is a floodlight. *(Ken Neubeck)*

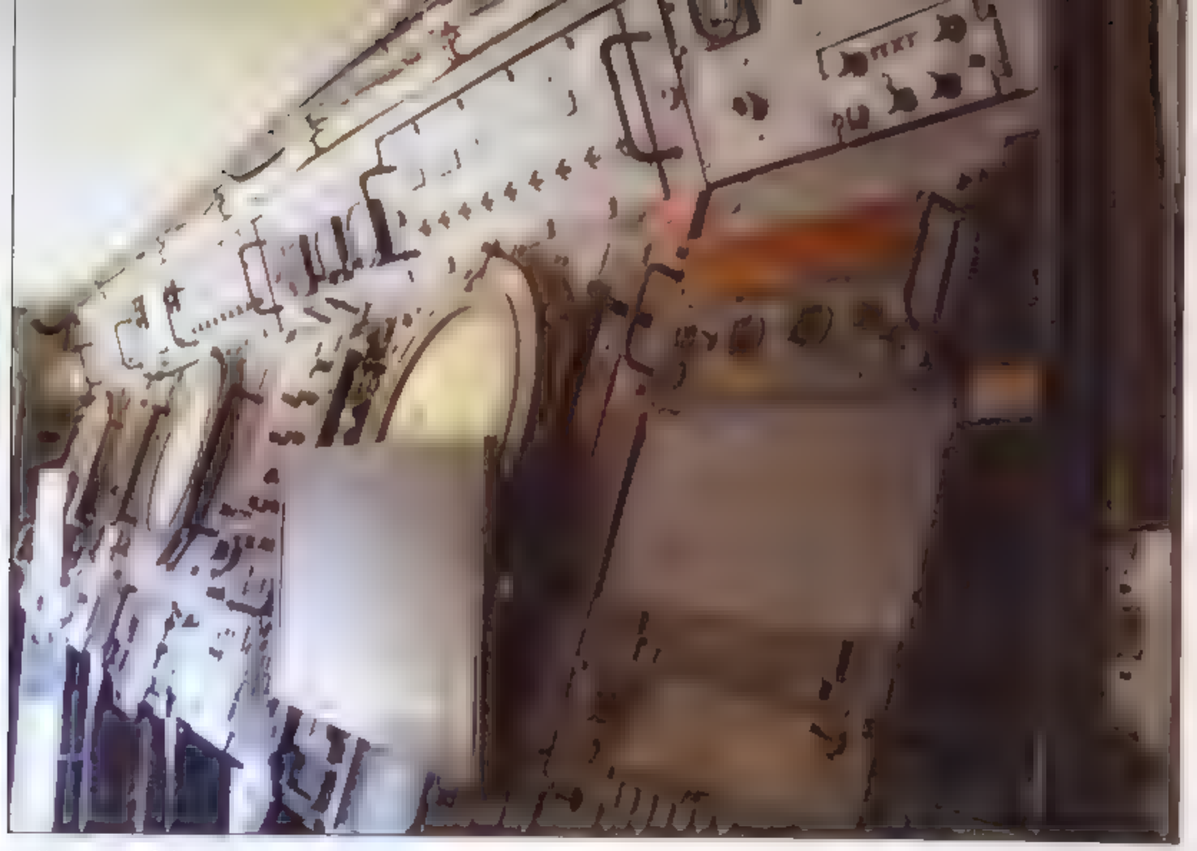


The E-2B model has three stations. Each station has a cathode ray tube (CRT) scope with control panels at the right. Two foot switches are on the floor of each station for intercom communications *(Ken Neubeck)*

To the right of the combat information officer in the E-2B is a series of control panels and radios. *(Ken Neubeck)*



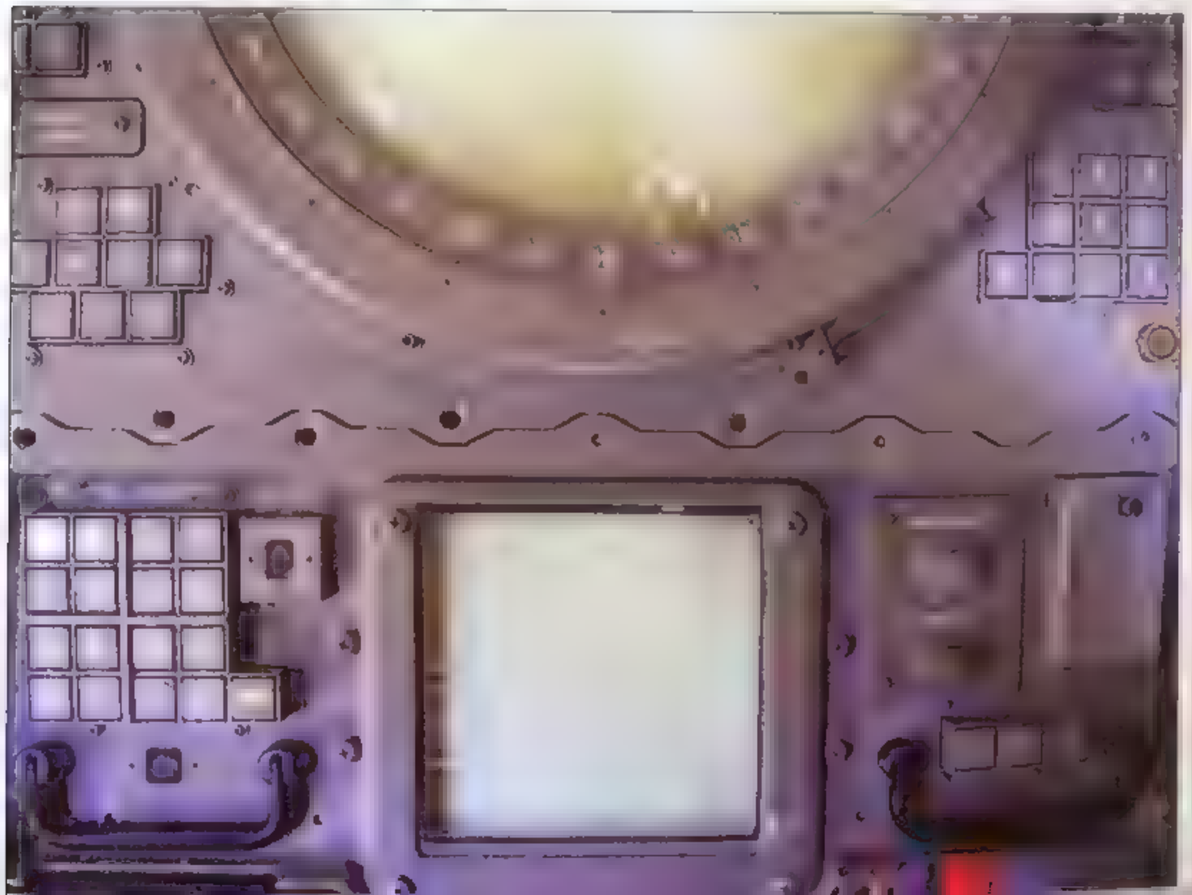
To the right of the radar operator in the E-2B is a keyboard for data entry and a Nixie-tube (LED display) multimeter. *(Ken Neubeck)*



In the rear of the E-2C aircraft, the three distinct stations (beginning with the station at the far left) are air controller, combat information officer, and radar operator. Equipment changes were made from the E-2B model. All stations have the same type CRT display; however, there are different instruments for the specific functions for each operator. *(Ken Neubeck)*

The equipment used in the three stations has seen several modifications over the years. The original CRT-style display used for the three stations is shown above. The scope is outlined with a 360-degree scale with control functions that are located on the left of the display along with an alphanumeric keypad located on the right. *(Ken Neubeck)*

Below each display is a signal scope which has various buttons and switches for the different symbols with the buttons on the lower right used for alerts for IFF and radar. *(Ken Neubeck)*



A series of control functions is located in the panel that is located above each display. The circular knobs on the left side control radar functions, while the knobs on the right control IFF functions. In the top panel, there are failure and overheat indicators. *(Ken Neubeck)*

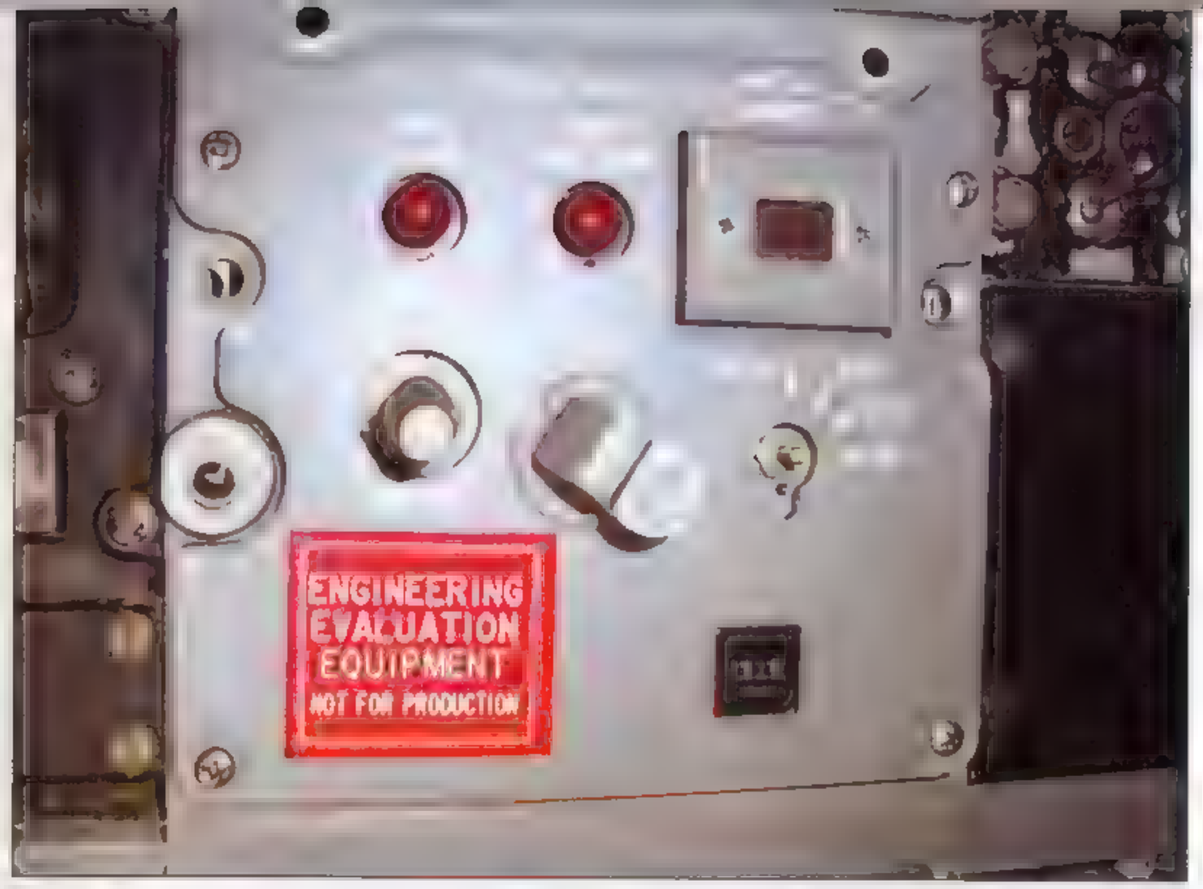
A series of panels is located on the right side of the air controller stations (the position closest to the rear of the aircraft) The two round gauges at the top are clocks, with the HF radio control panel located between them The long tube assembly that is located on the top left and right side of the panels shown above contains the probe element used by the operator to point at targets on the CRT display The emergency oxygen control panel is located at the top on the right side. The large panel in the middle is for target tracking, and the panel that is located at the far lower right is for UHF radio controls. *(Ken Neubeck)*

A close-up view of the series of panels that are located on the right side of the combat information officer Some of the panels are similar to those used by the air controller operator with some additional control panels The three round gauges at the top of the panel are for airspeed, altitude, and compass. *(Ken Neubeck)*

This is the series of panels that are located on the right side of the radar operator. The round gauge at the top is a clock, and the HF radio control panel is located below and to the right of the clock. There is a Nixie tube multimeter below the HF radio control that is used to measure voltages and resistance Toward the bottom is the remote switching control, and the series of panels on the right are used for radar control. *(Ken Neubeck)*

Located to the lower right of the radar operator is a series of power supplies for the different voltages for the radar displays, control panels, and lighting. Each of these power supplies has a metal switch guard attached to the panel in order to prevent accidental bumping as personnel pass through the tight interior quarters of the inside cabin area. *(Ken Neubeck)*

Close-up view of the combat officer's equipment shows the controls for the IFF along with target reports of outgoing air targets along with both incoming and outgoing surface targets. Azimuth knob controls can track 360 degrees around the aircraft. *(Ken Neubeck)*



Throughout E 2C service, there would be special equipment for engineering evaluation that would be installed. Note that for this piece of equipment shown, there is an elapsed-time meter on the bottom right to show the amount of operating hours for the equipment. Most of the electronic boxes have this meter. *(Ken Neubeck)*

This view from the rear of the aircraft toward the cockpit shows the relatively narrow space between the two sides of the aircraft. Note that the back of the radar operator s seat is removed, showing some of the lines. *(Ken Neubeck)*

All three seats for the instrument operators are located on the right side of the aircraft and have swivel capabilities. In the foreground is the radar operator seat, with the combat information officer seat behind it, and then the air controller seat. Each seat has seat belts and shoulder straps, along with a padded headrest. Note in the ceiling that there are a number of cutouts in the panel: emergency oxygen mask panel and the emergency escape access door. *(Ken Neubeck)*

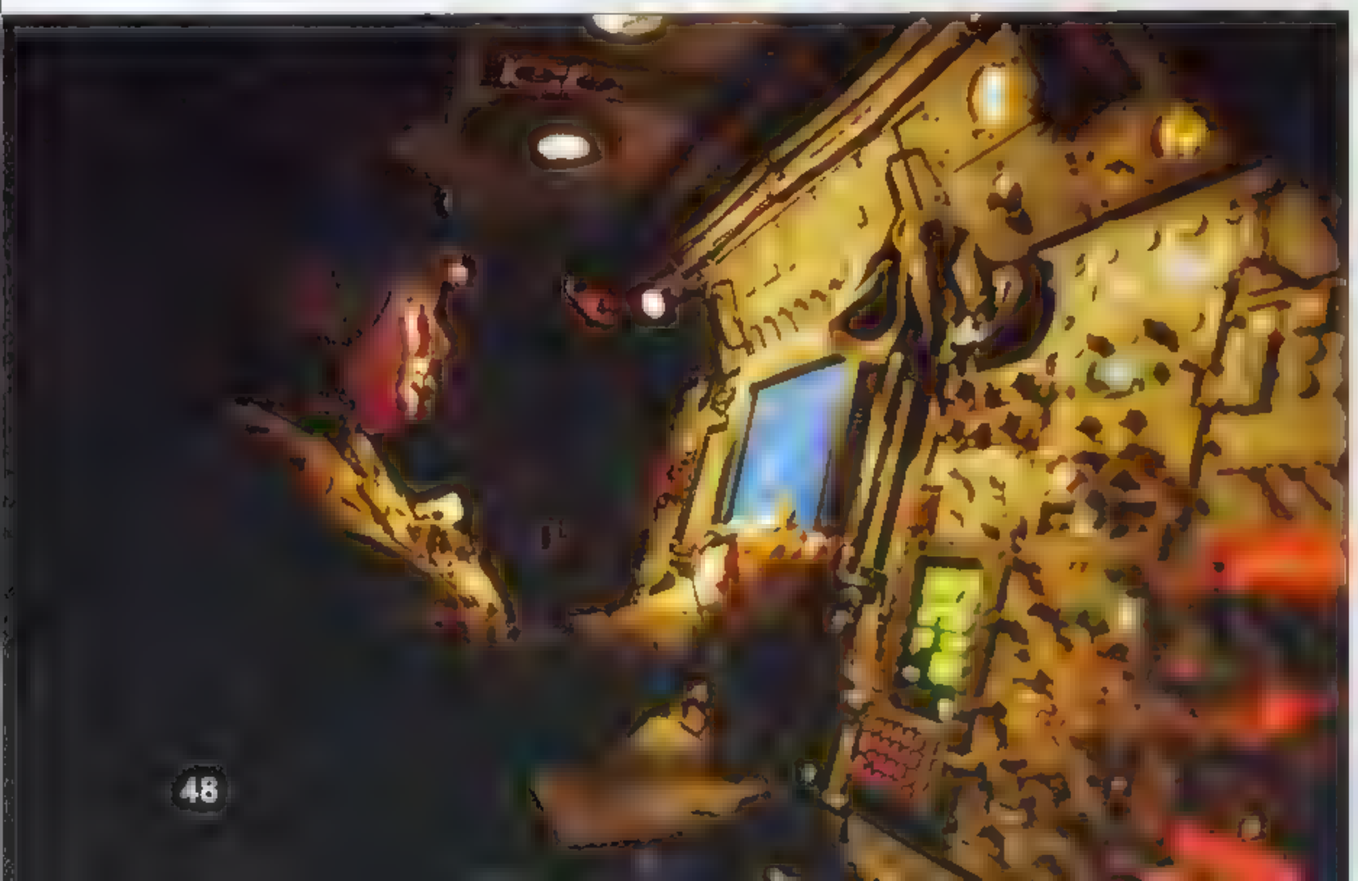
Located on the right side of the aircraft, in front of the radar operator's seat, is a very large junction box containing fuses for the automatic flight control system (AFCS). This system is used for directional stability augmentation, three-axis attitude control, and barometric altitude control of the aircraft. *(Ken Neubeck)*

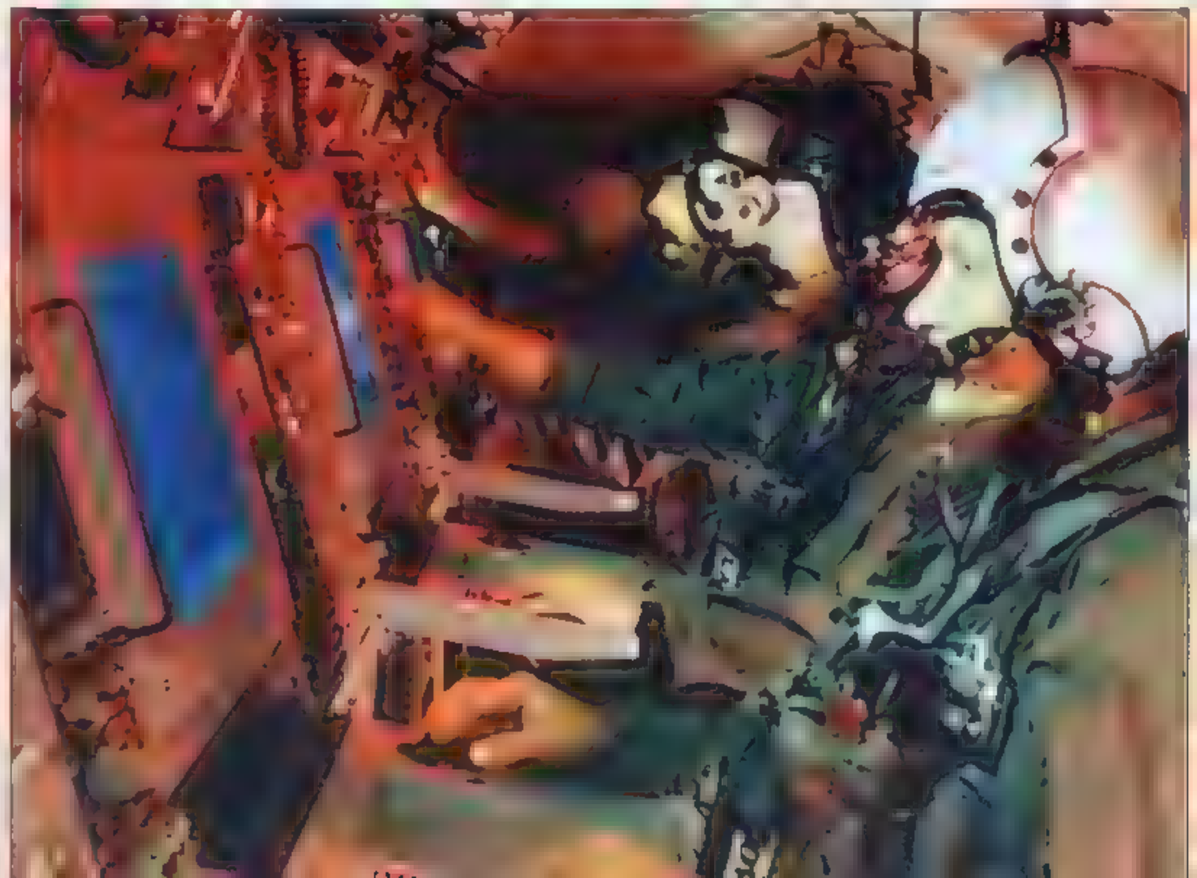
The radar operator uses his probe directly on the screen to move symbols Note that the display s newer and rectangular compared to a round display model shown earlier *(U S Navy Photo by Photographer's Mate 1st Class Jim Hampshire)*

An operator tracks using the portable probe Note that the panels to the right of the operator are upgraded from the original design shown before *(U S. Navy Photo by Photographer's Mate 1st Class Jim Hampshire)*

The equipment to the right of the radar operator has been upgraded to newer technology equipment from earlier E-2 configurations The combination display and keyboard unit that is immediately to the right of the operator's hand is one such upgrade over the older technology *(U S. Navy Photo by Photographer's Mate 1st Class J Scott Campbell)*

The E-2C Hawkeye 2000 upgrade has brought further changes for the three operator stations Radarscopes have been changed from a CRT model to an LCD-type screen, which is more reliable and generates less heat Some of the keys that previously surrounded the scopes have been moved to a standard keyboard that is built into the pull-down tray. *(Northrop Grumman)*



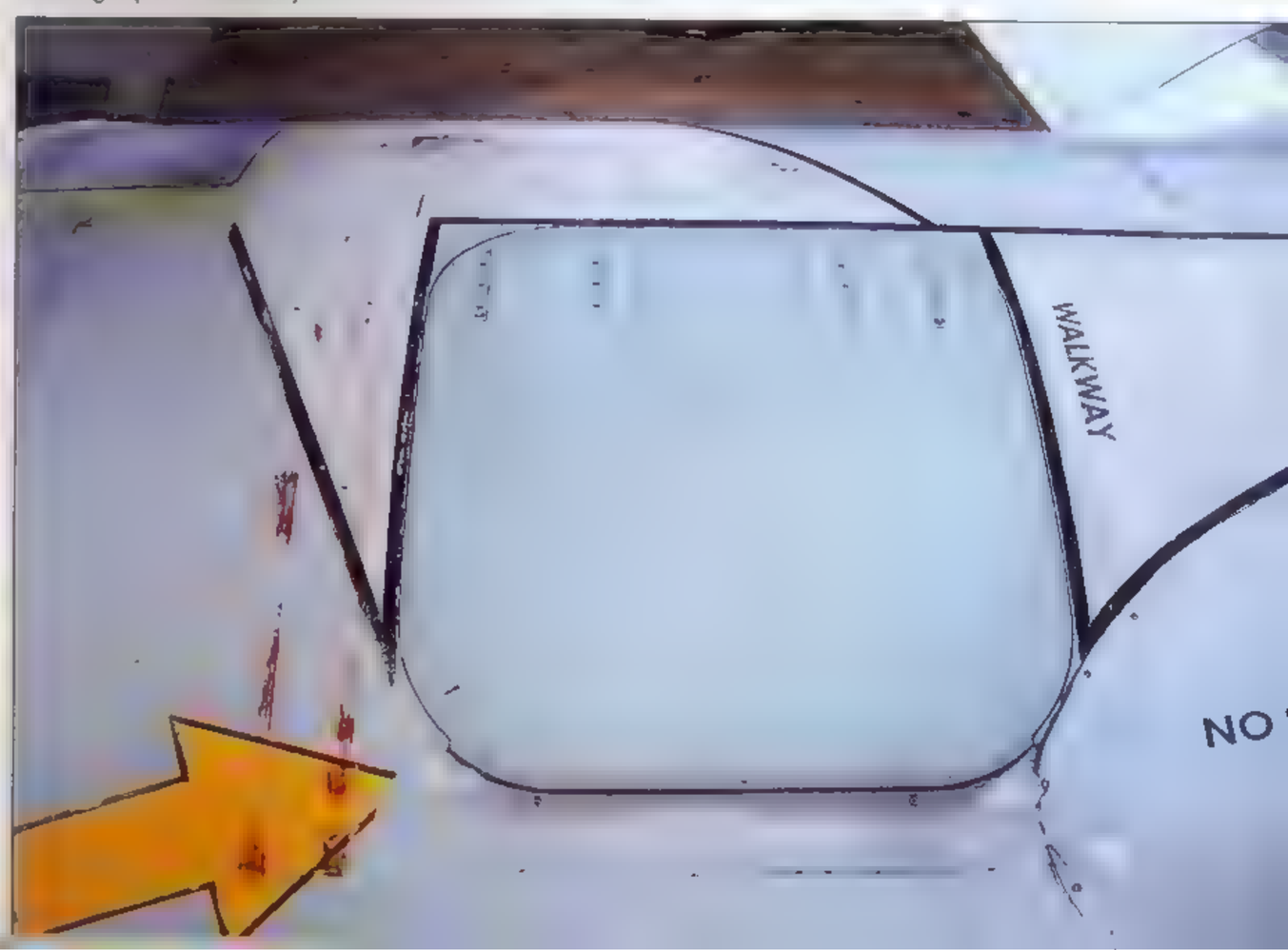


To the right of each seat is a small window with a hinged cover. Note that the walls are covered by canvas material in this section of the aircraft. *(Ken Neubeck)*

Above each seat is a panel that contains the emergency oxygen mask, similar to the setup used in commercial aircraft. *(Ken Neubeck)*

An emergency door used for ground escape is situated above the air controller seat. A large lever on the left side of the door is pulled down in order to open the hatch. *(Ken Neubeck)*

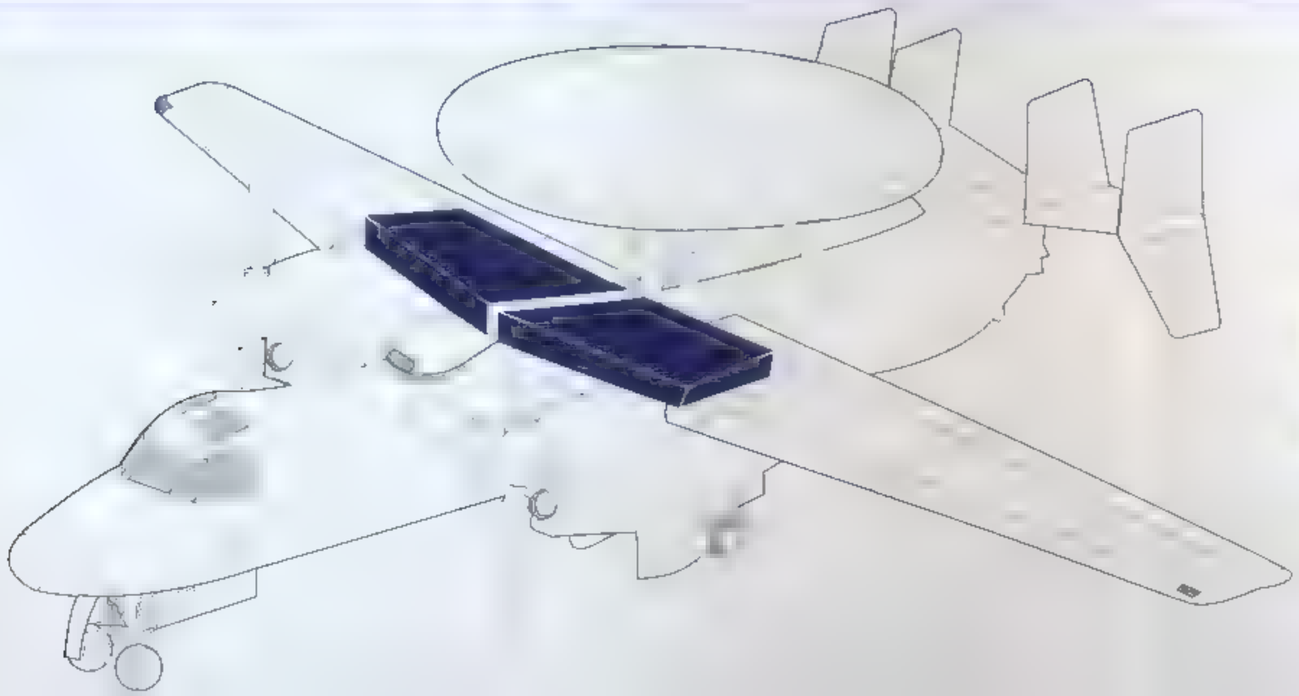
This is a view of the emergency escape hatch on the outside of the aircraft showing all of the surrounding markings. *(Ken Neubeck)*



(Above left) Forward top view of the E-2C shows several features of the aircraft. The window arrangement of the cockpit can be seen, including the top window sections. The cooling system intake located in front of the wings is used for the vapor cycle system radiator that is used for cooling the radar equipment. Two wire antenna sections extend from the front of the intake to the rotodome. The marked sections over the center section of the wings represent the area where the fuel tanks are located for the aircraft, going from the outside of the right nacelle to the outside of the left nacelle. *(Northrop Grumman)*

(Above right) In this top view of the aircraft that is preparing for takeoff, the shaded area on the wings outlining the fuel tanks can be seen. In addition, two of the sections of the fixed HF wire antenna are attached to the extrusion on top of the cockpit and are seen routed through guides situated on top of the wing sections. Note the landing cables for the arresting hook located on the carrier deck near the top of the photo. *(André Jans)*

Fuel Tank Locations



Tank	No.	Approximate Usable Fuel in Level Flight	
		Gallons	Pounds
Left Wing Tank	1	912	6,200
Right Wing Tank	1	912	6,200
Total	2	1,824	12,400

The wings of the E-2C aircraft are straight and perpendicular to the aircraft. They join the fuselage around the middle of the aircraft. Located at the forward portion of each wing tip is a navigation light, a green light for the right side and a red light for the left side. Four hinge assemblies attach the aileron structure to the wing. *(Ken Neubeck)*

The aileron hinge assembly consists of a set of pushrods attaching the aileron to the main wing. *(Ken Neubeck)*

Because the E-2 is a carrier-based aircraft, the wing is required to have the ability to pull out and then be stowed in a folded position. The point of this pivot is in the area where the wing meets the engine nacelle. *(Ken Neubeck)*

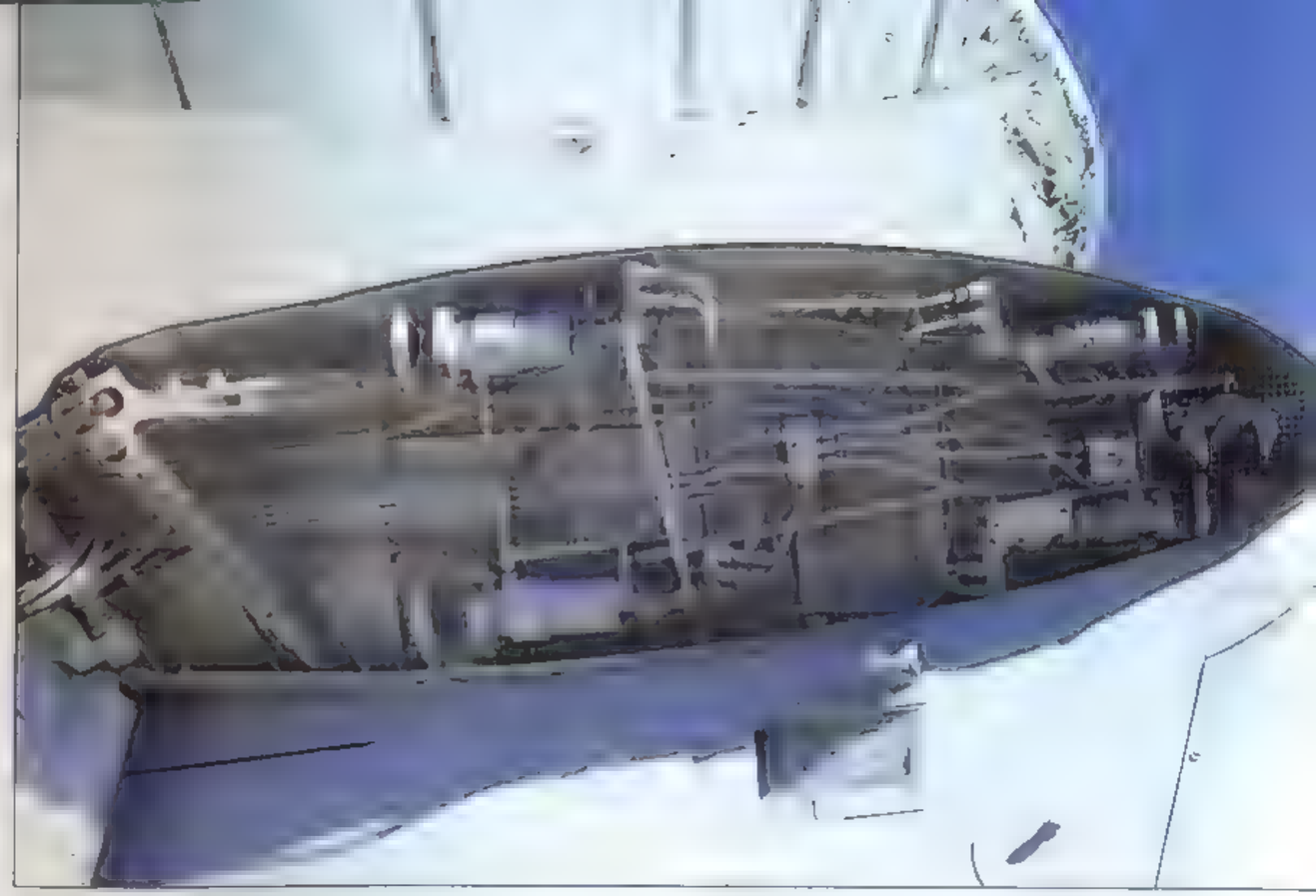
Because the E-2 is a carrier-based aircraft and space is a premium on the carrier deck, both wings of the E-2 Hawkeye can be folded and attached to the tail, as seen above with the left wing *(Ken Neubeck)*

The inside of the left wing shows the attachment mechanism protruding from the wing and engaging the locking pin extending from the tail *(Ken Neubeck)*

This detailed shot shows the actuator arm extending from a door in the left wing and the hook on the actuator engaging the locking pin on the tail *(Ken Neubeck)*

A series of mechanical and hydraulic components located in the pivot point of the wing allows both extensions of the wing to be in the parked position or locked for flight. *(Ken Neubeck)*

The outside surface of the folded wing structure consists primarily of hydraulic lines. Note that there are four ringlike structures on the surface. These engage with the four locking cylinders that are located on the aircraft section. *(Ken Neubeck)*



The two cylindrical objects near the center of the exposed area and the two cylindrical objects near the front comprise the spar locking mechanism. During flight, these objects engage with the four ringlike structures that are located on the wing structure. *(Ken Neubeck)*

The shiny metal rod is part of the wing hydraulic jack. It connects to two other linkages that are part of the wing folding mechanism. *(Ken Neubeck)*

The most unusual aspects of the E-2C Hawkeye's wings is the fact that it can be folded over in order for the aircraft to be stored on deck when not in use. The aircraft above has started the folding process while power is on. *(U.S. Navy)*

Ground personnel from the carrier *Kitty Hawk* are inspecting the right wing as it is unfolding. The engines have to be on in order to drive the hydraulic system for both the folding and unfolding operations. *(U.S. Navy Photo by Photographer's Mate 2nd Class Inez Lawson)*

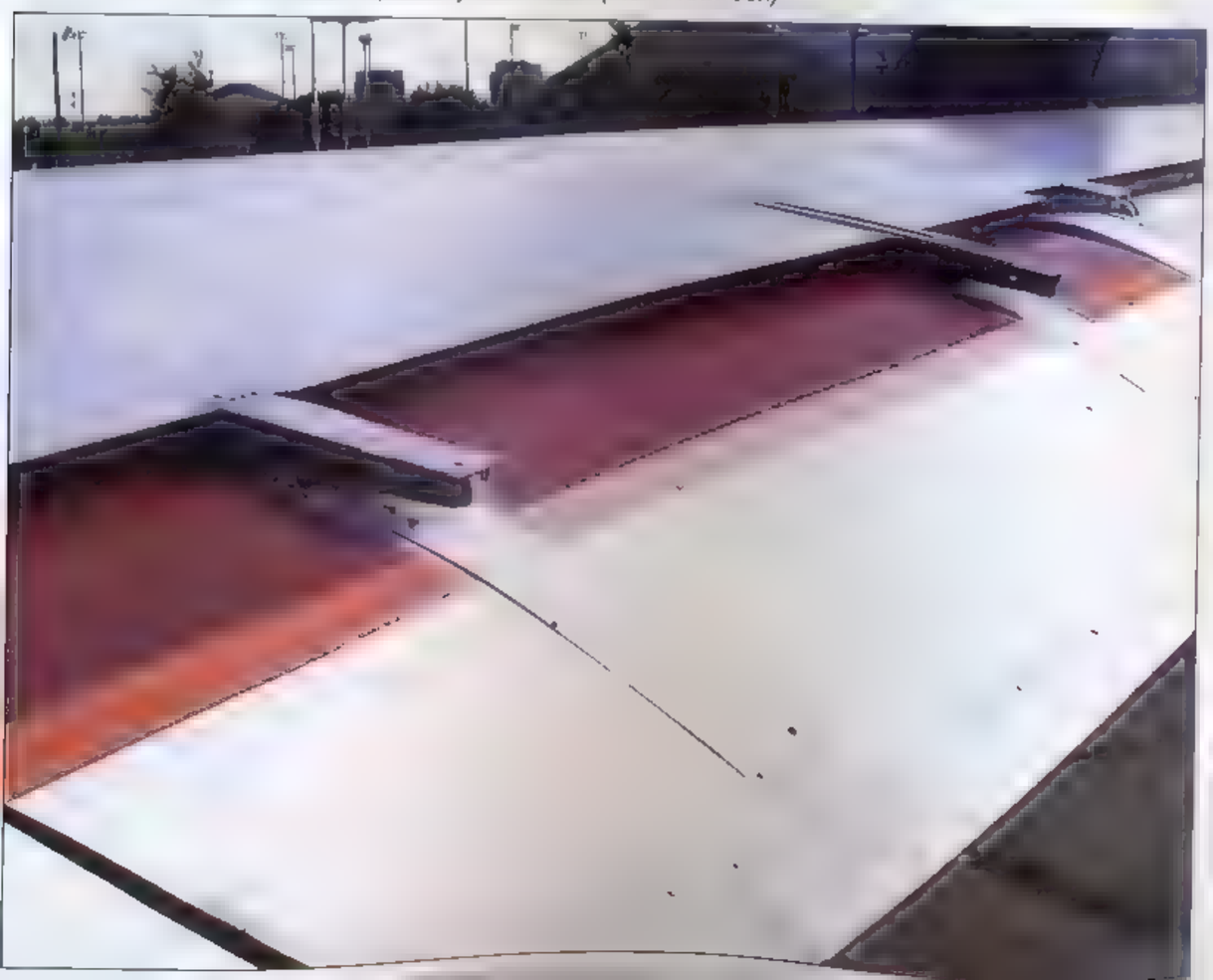
E-2C aircraft maneuver into position prior to takeoff from the *Kitty Hawk*. The hydraulic components and linking arms can be seen in the exposed sections. *(U.S. Navy Photo by Photographer's Mate Airman Stephen W. Rowe)*

Ground personnel from the *Ronald Reagan* (CVN 76) conduct final ground checks for E-2C aircraft prior to the wings being extended and ready for takeoff. *(U.S. Navy Photo by Photographer's Mate 3rd Class Christopher D. Blachly)*

This view of the left wing shows the three major surfaces that come off the wing the port outboard aileron, the port outboard flap, and the port inboard flap. *(Ken Neubeck)*

A close-up view from underneath the starboard outboard flap and the attaching hinges *(Ken Neubeck)*

The starboard outboard flap is partially extended *(Ken Neubeck)*

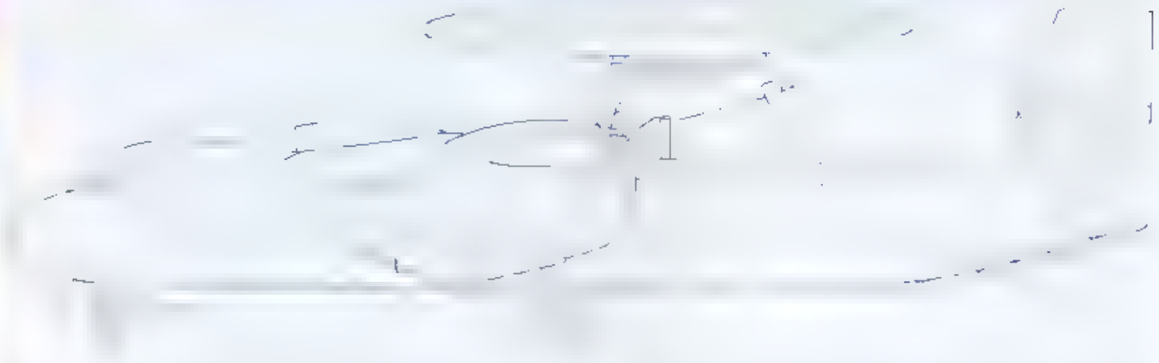


This close-up view from underneath shows the attaching hinge to the outboard aileron on the right side of the aircraft *(Ken Neubeck)*

The large rotating dome situated on top of the E-2 fuselage, known as the rotodome, contains several antenna arrays for UHF and for radar use. *(Ken Neubeck)*

While the rotodome rotates on an internal shaft, inside of the shaft is a nonrotating structure that contains the wave guides that feed into the antenna structures, which is the squarelike extrusion feeding into the structure as shown above. *(Ken Neubeck)*

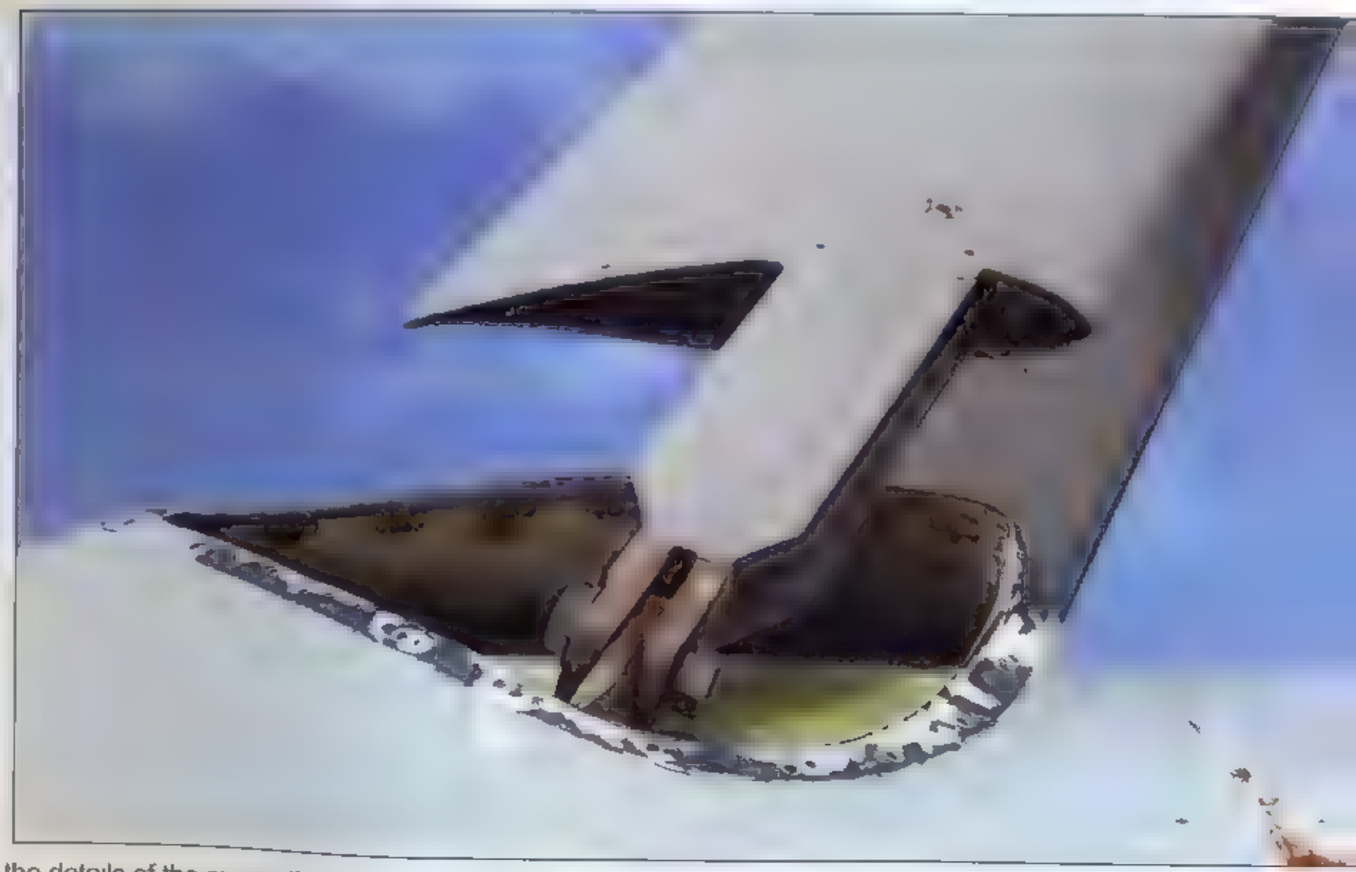
E-2 Radar Dome (Rotodome)



When retracted, the height from the top of the rotodome to the ground is 16 feet 5.5 inches; when raised, it is 18 feet 3.75 inches. (For E-2C versions without SATCOM dome antenna.)

Summary of Configurations

	Type	First Service Year	Radar Type	Engine Type
1	E-2A	1964	AN/APS-96	T-56-A-425
2	E-2B	1969	AN/APS-96	T-56-A-425
3	E-2C, Group 0	1972	AN/APS-120	T-56-A-425
4	E-2C, Group 0	1978	AN/APS-125	T-56-A-425
5	E-2C, Group 0	1984	AN/APS-138	T-56-A-425
6	E-2C, Group I	1988	AN/APS-139	T-56-A-427
7	E-2C, Group II	1991	AN/APS-145	T-56-A-427
8	E-2C+	2001	AN/APS-145	T-56-A-427
9	Hawkeye 2000	2003	AN/APS-145	T-56-A-427



The removal of the rotodome from this E-2C aircraft for maintenance allows for an in-depth look at all of the details of the supporting structure. The top left photo shows the basic structure above the aircraft's fuselage. The top right photo shows the bottom of the structure with the cover removed from one of the large metal bearing assemblies that the shaft rotates in. The bottom left photo shows loop antennas that look like handles, and the bottom right photo shows one of the six bracket assemblies that connect the structure to the fuselage *(Ken Neubeck)*

This s a view of the 24-foot rotodome of the early configurat.on removed from the aircraft for maintenance along w.th the internal steel shaft *(Ken Neubeck)*

The internal shaft that the dome is mounted on is made of stainless steel and is over 1 foot in diameter and 4 feet in length. *(Ken Neubeck)*

This close-up view shows the shaft attached to the dome by means of bolts around the co lar. The shaft rotates around the fixed wave guide. *(Ken Neubeck)*

When the interna shaft is insta led into the bearing, a metal structure covers this shaft and the wave guide structure protrudes from the support structure. *(John A. Gourley III)*

A full view of the rotodome structure design Note that there are several circular access panels located on the right side of the dome in this shot. These access doors allow access to the IFF and UHF antennas inside the dome. Note the two legs of the HF wire antenna that run past the rotodome structure from the tail to the front fuselage area. *(John A. Gourley III)*

This view shows where the crew emergency escape panel is located in reference to the fuselage and wing. *(Ken Neubeck)*

Below the last two windows of the rear crew station is an emergency panel that can be cut by ground personnel in order to rescue the crew in the event of a ground emergency *(Ken Neubeck)*

The E-2 Hawkeye shows a slight bend upward in the fuselage as the tail section is approached *(Ken Neubeck)*

A view of the top of the tail section where it meets with the fuselage. In the background is a Grumman S-2 Tracker, which is the 1950s ancestor to the E-2 Hawkeye. These aircraft are located in the aerospace park of the Cradle of Aviation Museum at Mitchel Field, Long Island. *(Ken Neubeck)*

The E-2C has an unusual tail design, known as a dihedral design, with two additional vertical sections in order to accommodate the unique airflow that is created by the radar dome (removed in this photo) *(Ken Neubeck)*

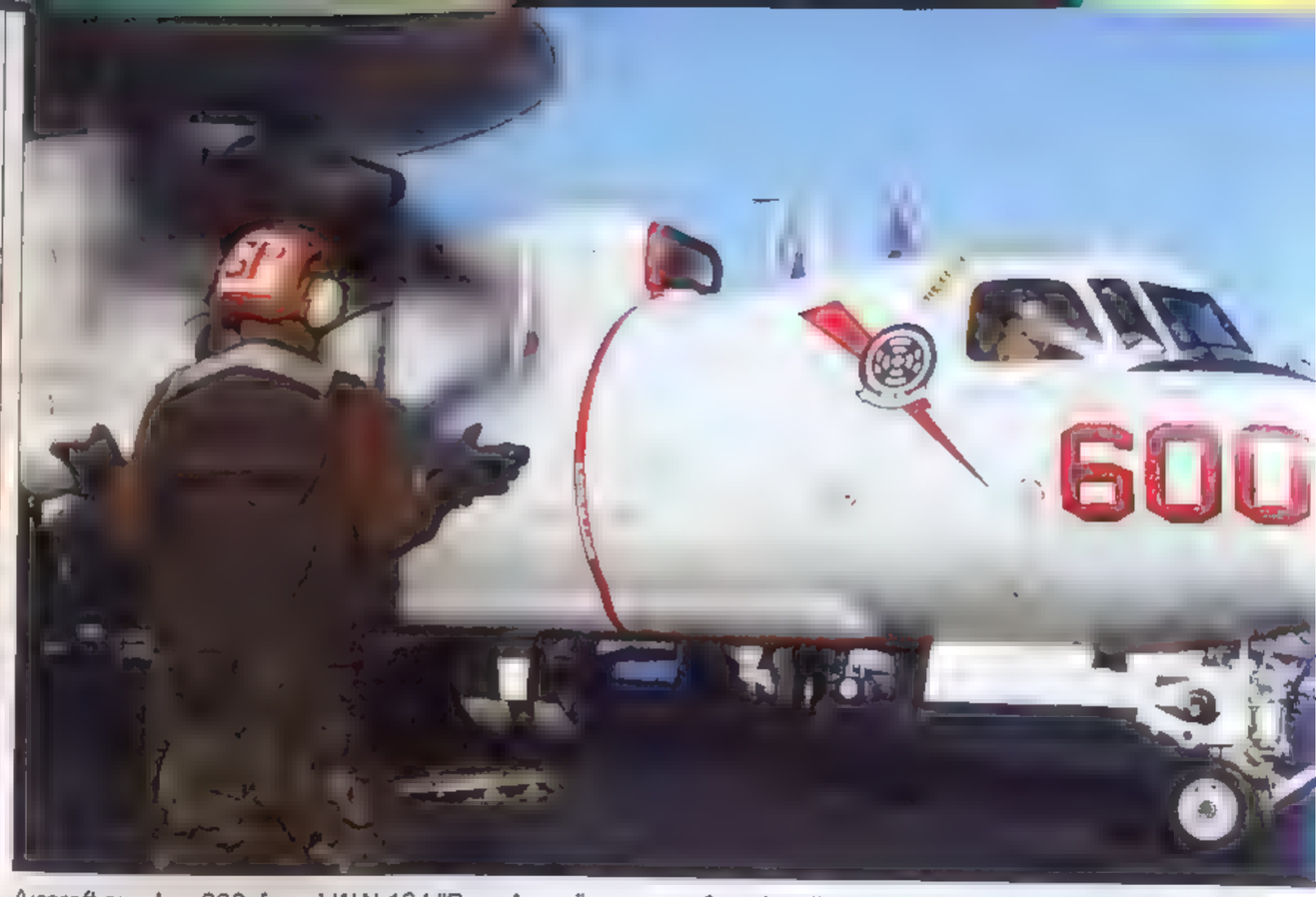
This close-up view of the left side of the tail assembly shows the additional vertical fin that is located in the middle of each side of the horizontal section. The fins and parts of the outside tail section are made of fiberglass *(Ken Neubeck)*

Tail markings show serial number and squadron markings. Note carrier name *(George Washington)* and wing numbers are on the fuselage of the aircraft. *(John A. Gourley III)*

Many E-2C Hawkeye aircraft in service have a lightning motif *(John A. Gourley III)*

Another lightning motif design on the tail of an E-2 aircraft from VAW-78. *(John A. Gourley III)*

In addition to squadron markings on the tail, there are several other locations for markings on the E-2C aircraft, including the forward fuselage area and the area behind the rear cockpit window. (See her color profile on page 77.) *(John A. Gourley III)*



Aircraft number 600, from VAW-124 "Bear Aces," prepares for takeoff on the flight deck of the *Theodore Roosevelt. (U.S. Navy Photo by Photographer's Mate 3rd Class Matthew Bash)*

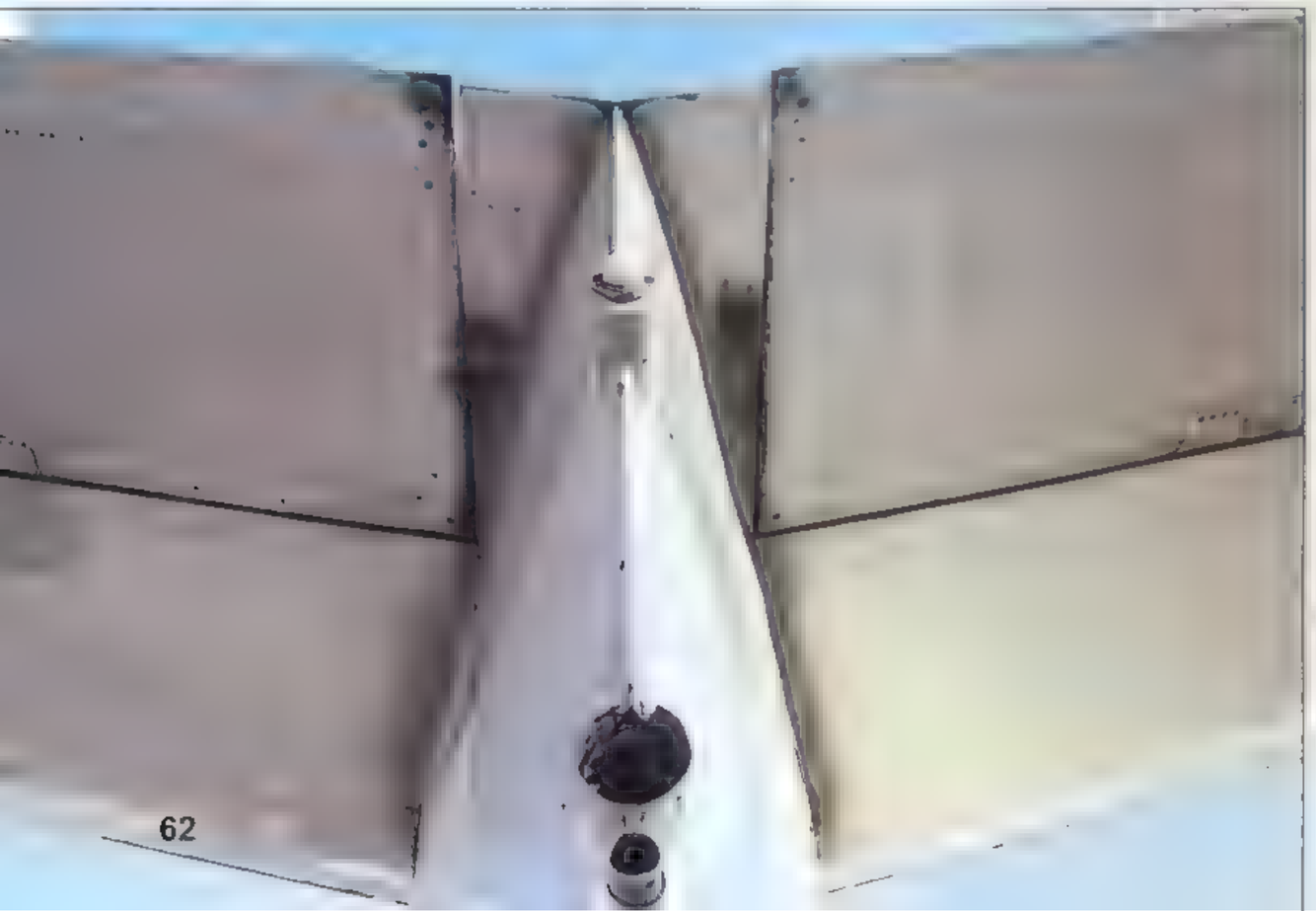
This is the insignia for the VAW-122 "Steeljaws" squadron that was originally based in the East Coast. *(John A. Gourley III)*

The insignia for VAW 120 "Greyhawks" is also placed behind the rear cockpit window *(John A. Gourley III)*

A close-up view of the insignia of VAW-124 that is placed behind the rear cockpit window. *(John A. Gourley III)*

Several items are located in the tail section of the E-2C Hawkeye, including access doors, the tail hook assembly, the tail skid assembly, fuel vent ports, and taillight. *(Ken Neubeck)*

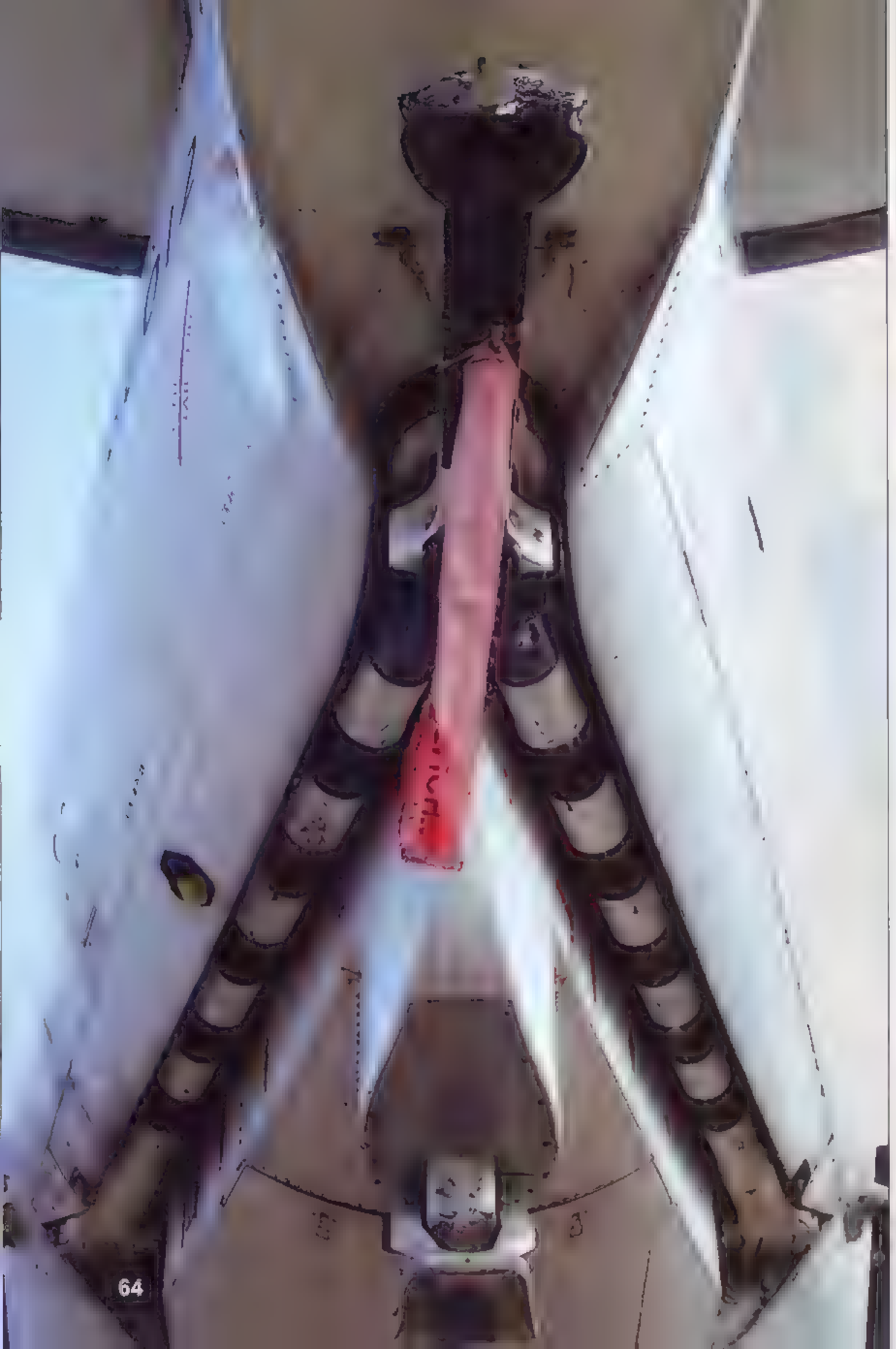
At the point of rear section of the tail assembly from top to bottom are the taillight, the fuel dump opening, and the fuel vent opening. *(Ken Neubeck)*



This close-up view shows the two ports of the fuel dump system mounted on a plate that is located below the taillight. Note that this plate and other panels use standard Phillips-head screw hardware *(Ken Neubeck)*

Tail numbers represent the last four numbers of the aircraft s serial number The complete serial number for the aircraft above is 168639. There is a small light at the top of the tail section The small extension that protrudes from the front of the tail is the wing fold jury strut lock for when the wing is folded and stowed. *(Ken Neubeck)*

This rear-view shot of the tail section shows the fuel dump vents, fairing, arresting hook assembly, and tail skid assembly on the lower part of fuselage Going forward from the tail skid assembly are some of the various VHF/UHF antennas that are located on the bottom of the fuselage. *(Ken Neubeck)*



(Above) The tail hook is in deployed position, resting on the tarmac. During carrier landing, the tail hook is extended through pneumatic pressure in order to catch on to one of three cables that extend across the carrier landing area. The trailing HF antenna assembly is the red ball at the bottom portion of the fuselage. *(John A. Gourley III)*

(Left) The arresting hook is in the stowed position, tucked away inside the tail assembly just above the tail skid. The two legs of the arresting hook are painted in an alternating black and white zebra pattern. A retaining pin with a warning flag, which has to be removed before flight, is located at the end of the tail hook. *(Ken Neubeck)*

An E-2C completes its first flight using the new eight-blade propeller out of Naval Air Station Patuxent River in Maryland. *(U.S. Navy Photo by Vernon Pugh)*

A Hawkeye aircraft returns to the carrier with the tail hook assembly deployed and leaning on the tail skid. It is approaching the first landing cable on the *Theodore Roosevelt*. *(U.S. Navy Photo by Photographer's Mate Airman Stephen Maddox)*

This E-2C aircraft is about to land on the deck of the *John F. Kennedy* (CVA 67) with its tail hook ready to engage one of the landing cable assemblies that are held by the white slabs that are located on deck. *(U.S. Navy Photo by Photographer's Mate 3rd Class Christian Weibull)*

This E-2C has completed its landing, and the tail hook has engaged one of the cables that is stretched across the deck of the *Harry S. Truman*. *(U.S. Navy Photo by Photographer's Mate Airman Krstopher Wilson)*

View of the rear section of the aircraft shows the major components of the tail section, such as the arresting hook, tail skid, and hook pin flag. *(Ken Neubeck)*

Near the area where the horizontal stabilizer meets the fuselage, the right elevator flap structure begins. *(Ken Neubeck)*

The inside view of the left lower vertical tail section. The extrusion that is located in front of the elevator section on the horizontal stabilizer is one of the attachment points for the fixed HF antenna *(Ken Neubeck)*

A U.S. Navy maintenance sailor checks the vertical fin on an E-2C Hawkeye aircraft. Note the numerous access doors that are located on the horizontal stabilizer. Some of these doors are for antenna access. *(U.S. Navy Photo by Photographer's Mate Airman Bo Flannigan)*

The ram air inlet used for the vapor cycle cooling radiator on the E-2C model has been moved forward from the E-2B model. Note that for this model, the red warning line extends to over the top of the ram air inlet. *(Ken Neubeck)*

As the ram air inlet is moved forward for the E-2C model, the extrusion for the fixed HF antenna attachment point is closer to the inlet. *(Ken Neubeck)*

This is one of the two guides located on the top part of the wing for the HF fixed wire antenna. Note that leftover pieces of the antenna are still on both sides of the clamp. *(Ken Neubeck)*

The fixed wire HF antenna comes out of the aircraft through this hole in the insignia on the left side of the aircraft and is routed to an attachment point on the underside of the left section of the horizontal stabilizer and then to the front of the aircraft. *(Ken Neubeck)*

Personnel from the *Harry S. Truman* wash down an E-2C aircraft. This photo shows the routing of the fixed HF wire antenna coming out of the hole in the insignia to the attachment point on the left horizontal stabilizer. The antenna is then routed to the attachment point in front of the ram air-cooling inlet on top of the fuselage behind the cockpit area, and then back to an attachment point on the right horizontal stabilizer. The red ball assembly in the lower fuselage near the arresting hook area is the area where the trailing wire HF antenna is used during flight. *(U.S. Navy Photo by Photographer's Mate Airman Apprentice Ricardo J. Reyes)*

France has purchased four E-2C Hawkeye aircraft from Northrop Grumman in recent years. This aircraft is in the hangar with wings stowed in the parked position. (See her color profile on page 79.) *(Eric Pajaud)*

For the French E-2C aircraft, artwork is placed on the top nose section instead of behind the rear cockpit window. Here is eagle artwork on one aircraft. *(Eric Pajaud)*

Japan has purchased four E-2C's from Northrop Grumman over the years. The markings on these aircraft are simple, with the red circle on the rear fuselage followed by JASDF. *(Northrop Grumman)*

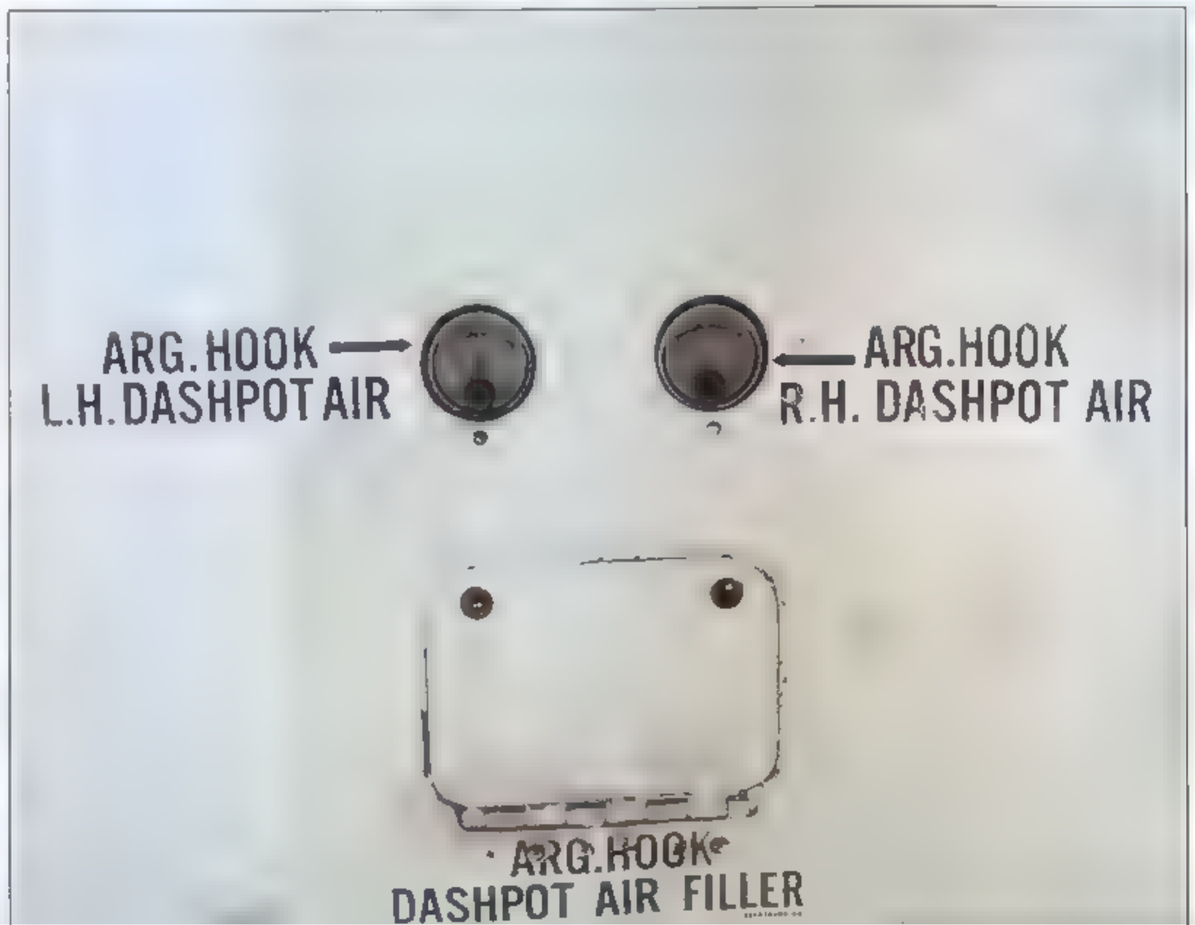
Another Japanese E-2C aircraft takes off from Iruma Air Base in November 2006. E-2C's have been in service for Japan since the 1980s. Note the bat emblem behind the right cockpit window. (See her color profile on page 79.) *(André Jans)*

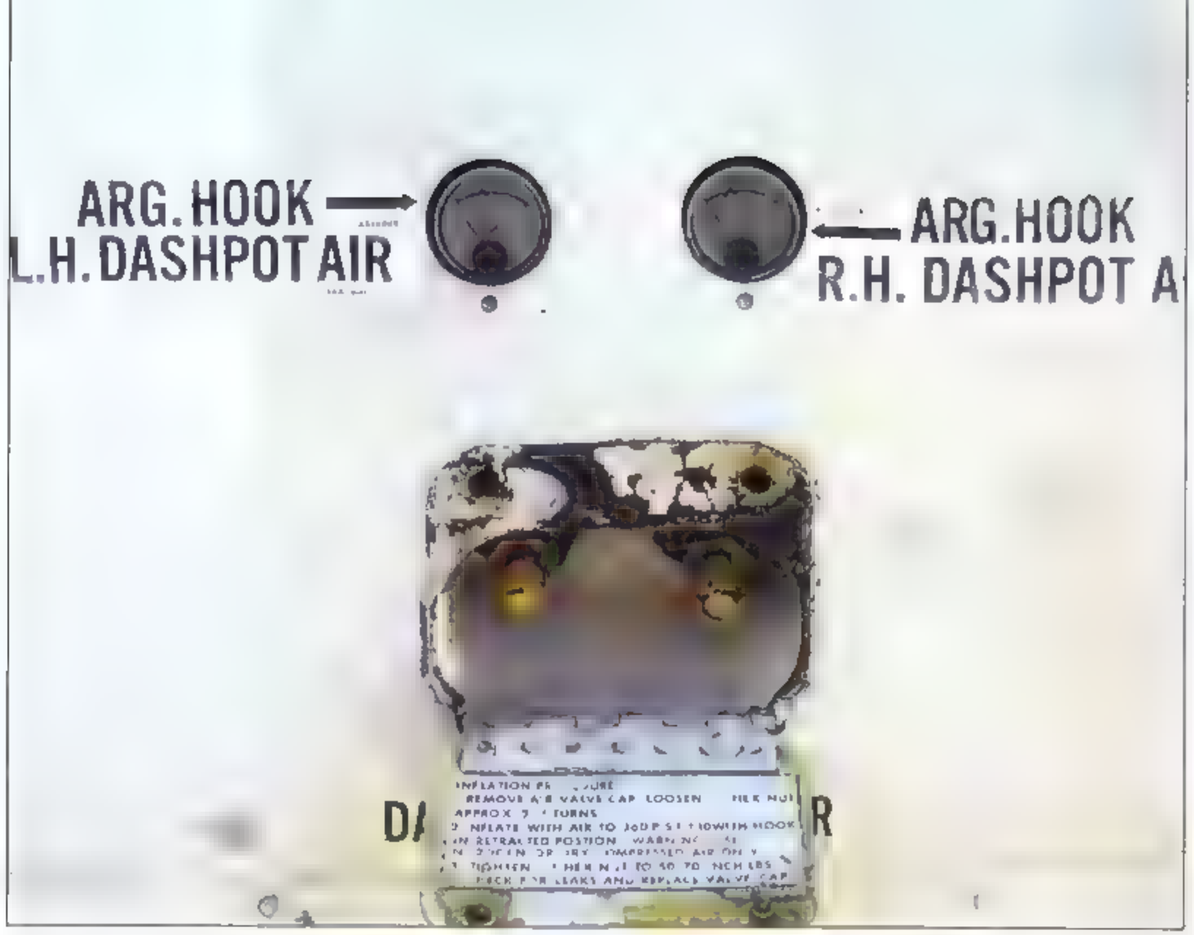
This left side view of the arresting hook area shows how it fits into the tail assembly and the access door for filing air into the system. *(Ken Neubeck)*

The tail skid air bottle filler access door is open, revealing the valve assembly for introducing air into the tail skid system. *(Ken Neubeck)*

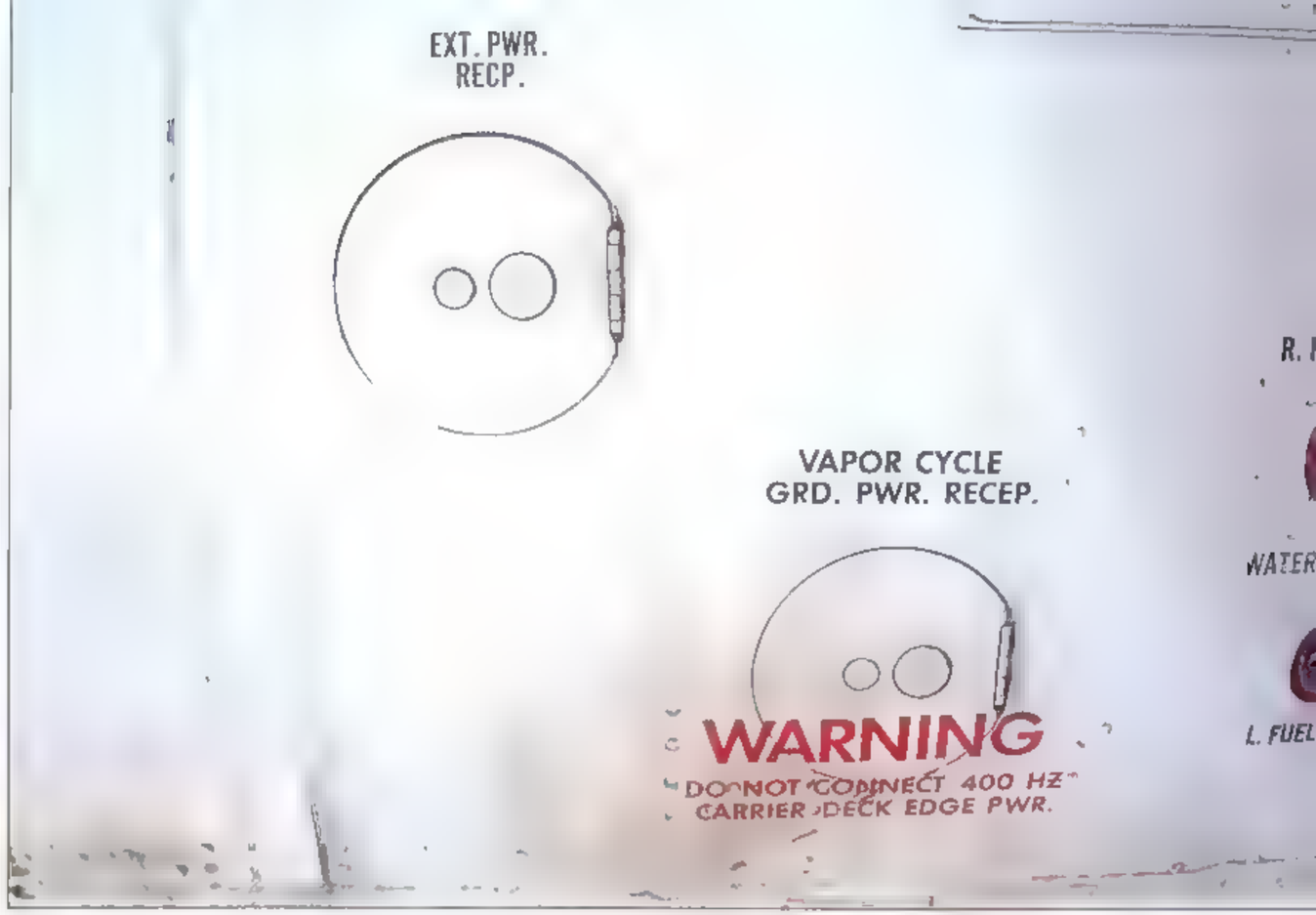
In this view from the left side of the tail section, the tail skid structure is seen protruding from the rear of the tail section, below the stowed arresting hook. *(Ken Neubeck)*

Located on the left side of the tail assembly are gauges for monitoring both the left-hand and right-hand dashpot pressure of the arresting hook system. *(Ken Neubeck)*



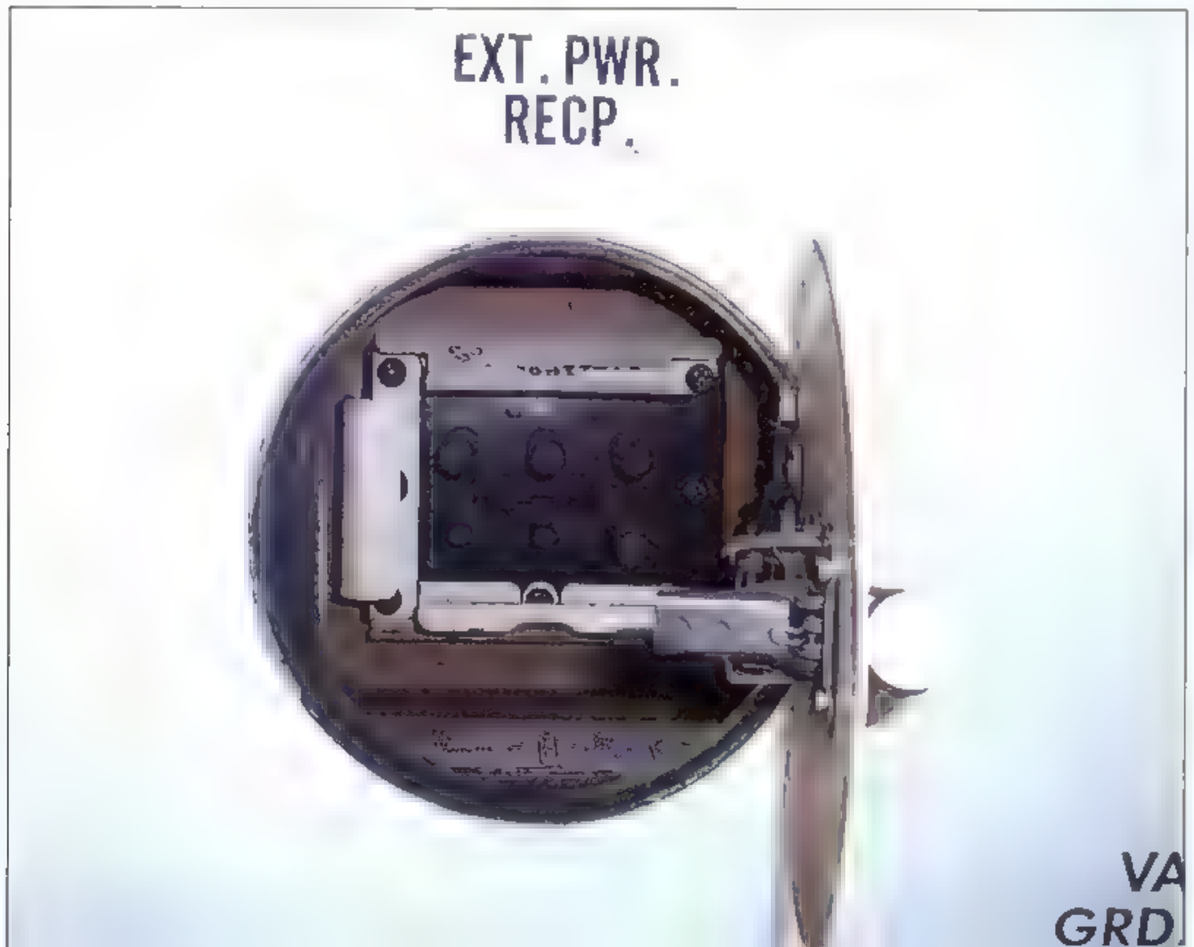


Inside the access door, the arresting hook dashpot pneumatic system has two distinct valve assemblies for filling air. The specified pressure for the system is 360 psi. *(Ken Neubeck)*

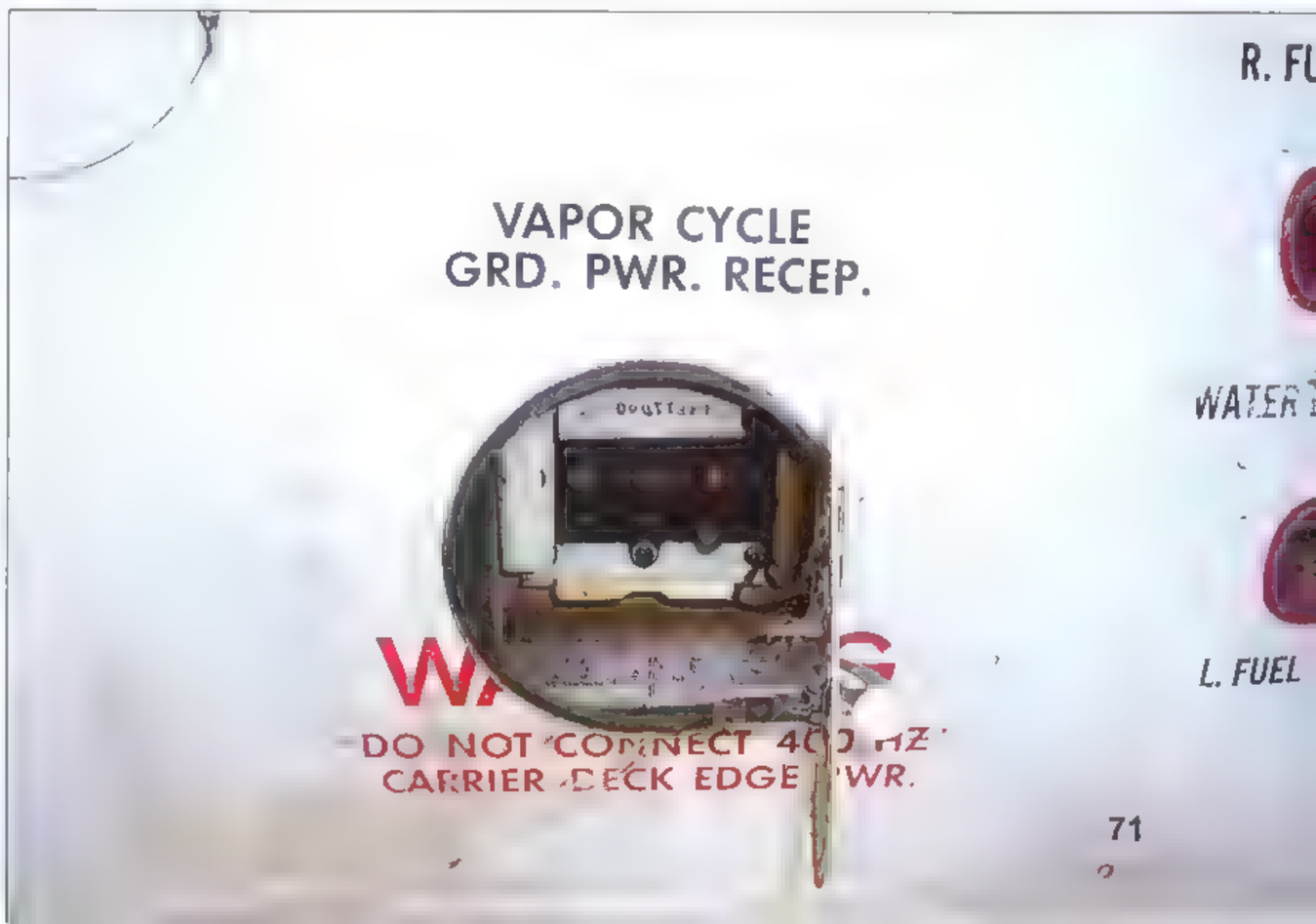


A series of access doors and drains are located on the left side forward of the tail section. The two access doors seen here are quick-release for ground power connections. *(Ken Neubeck)*

The access door for the external power receptacle is opened, revealing a six-pin connection *(Ken Neubeck)*



The access door for the vapor cycle ground power receptacle is shown in the open position, with a similar six-pin connector underneath. *(Ken Neubeck)*



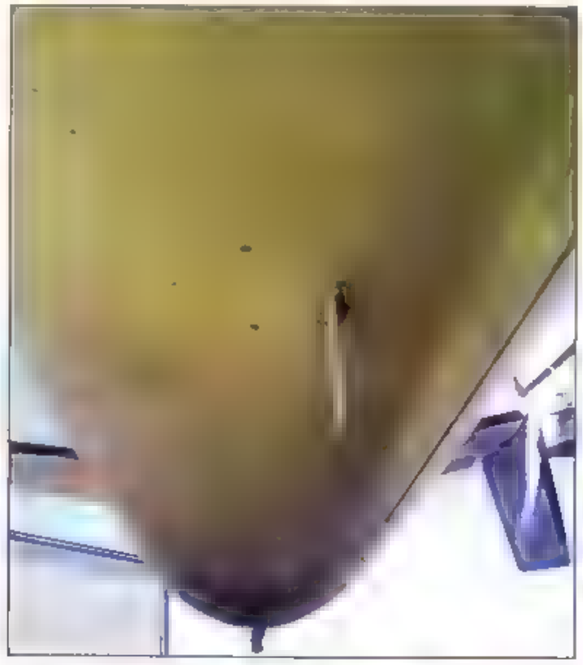
This E-2C aircraft from the *Kitty Hawk* prepares to land with the arresting hook extended and the three landing gears extended. This view of the lower fuselage area of the aircraft shows the five VHF/UHF blade antennas that are situated along the middle of the fuselage. In addition, all of the insignia markings can be seen on the tail, fuselage, and cockpit area. (See her color profile on page 77.) *(U.S. Navy Photo by Photographer's Mate Airman Joshua Wayne LeGrand)*

Navy technicians work on top of the rotodome of a E-2C+ aircraft, removing and replacing the SATCOM antenna unit. *(U.S. Navy Photo by Photographer's Mate Airman Phillip V. Morrill)*

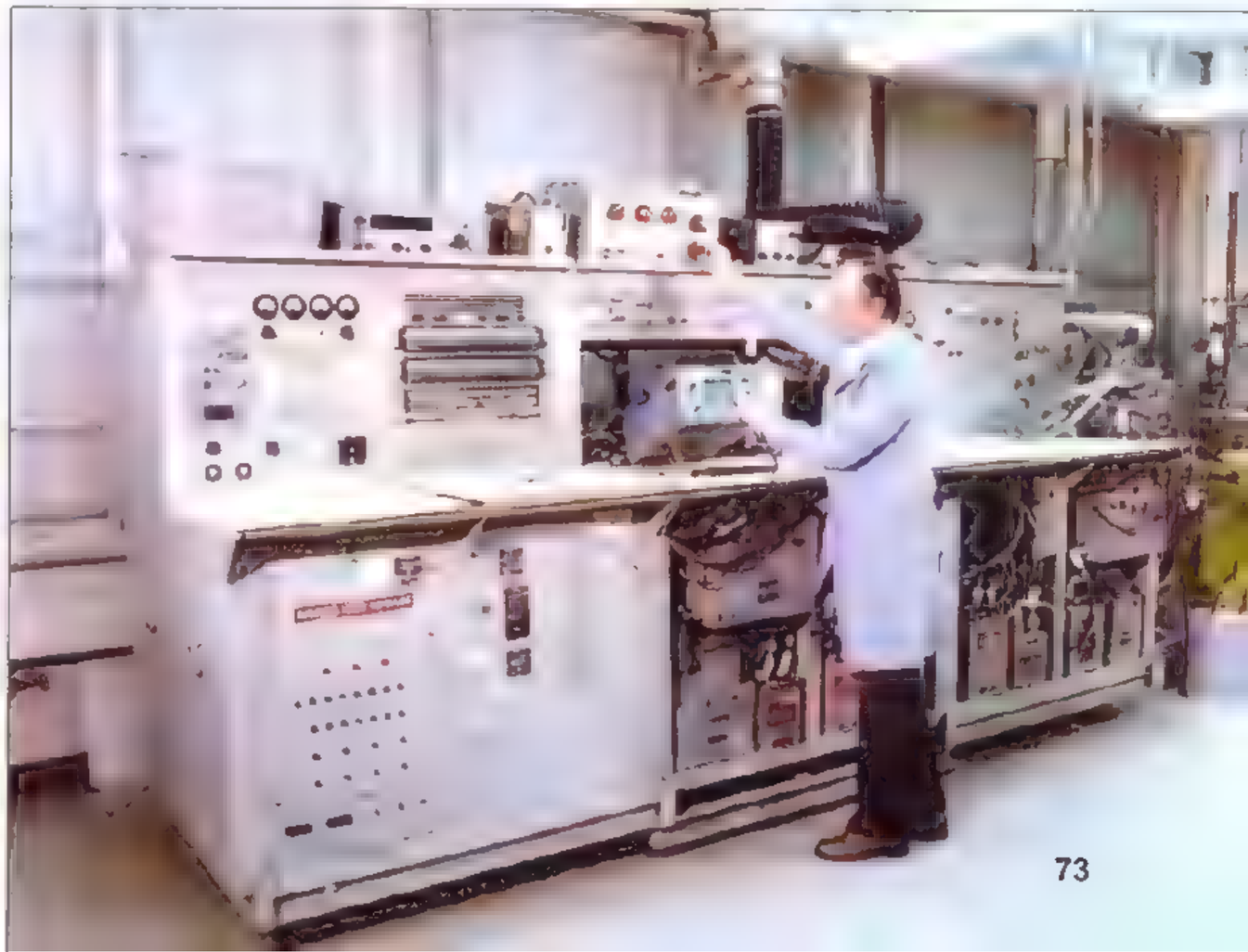
(Above) Because the aircraft is subjected to salt water spray, the risk of corrosion is high and the aircraft surface has to constantly be washed and scrubbed down. *(U.S. Navy Photo by Petty Officer 2nd Class Milosz Peterski)*

(Below) The test bench for the E-2C radar equipment was made by Grumman. A significant amount of test equipment has to be put into each carrier to support the E-2C. *(Northrop Grumman)*

A maintenance sailor cleans the lower fuselage of an E-2C Hawkeye on the flight deck. The antennas are two of the five VHF/UHF antennas that are located on the lower fuselage of the E-2C. *(U.S. Navy Photo by Photographer's Mate Airman James R. Evans)*



This view of the lower fuselage section of an E-2B aircraft shows three of the five HF/UHF antennas that are located on the bottom fuselage. The VHF/UHF antenna configuration was the same on the E-2B and the E-2C models. *(Ken Neubeck)*

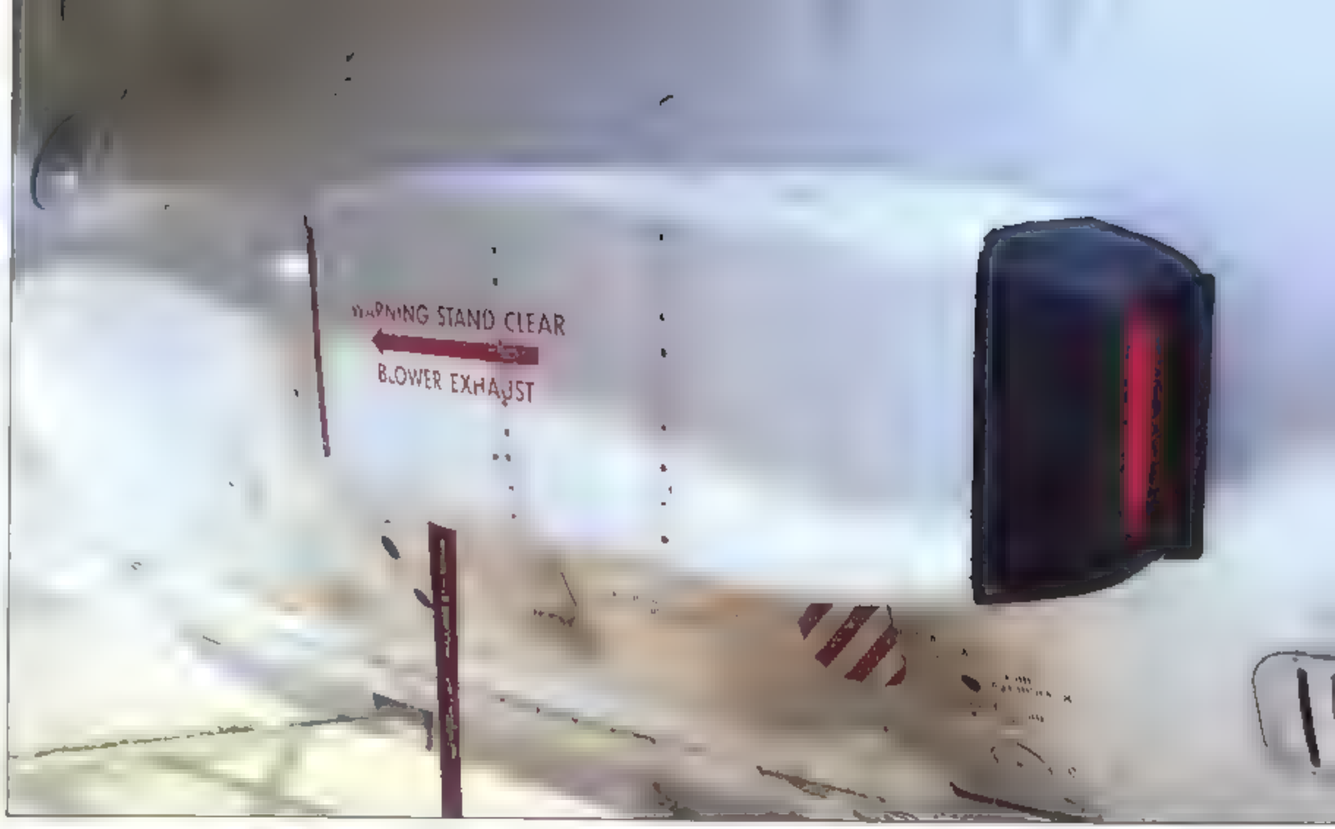


This view of the lower fuselage toward the rear of the aircraft shows the Doppler navigation antennas, the primary JTIDS antenna, and a cooling vent port that is located toward the front of aircraft. The five VHF/UHF blade antennas are located farther toward the front of the aircraft. *(Ken Neubeck)*

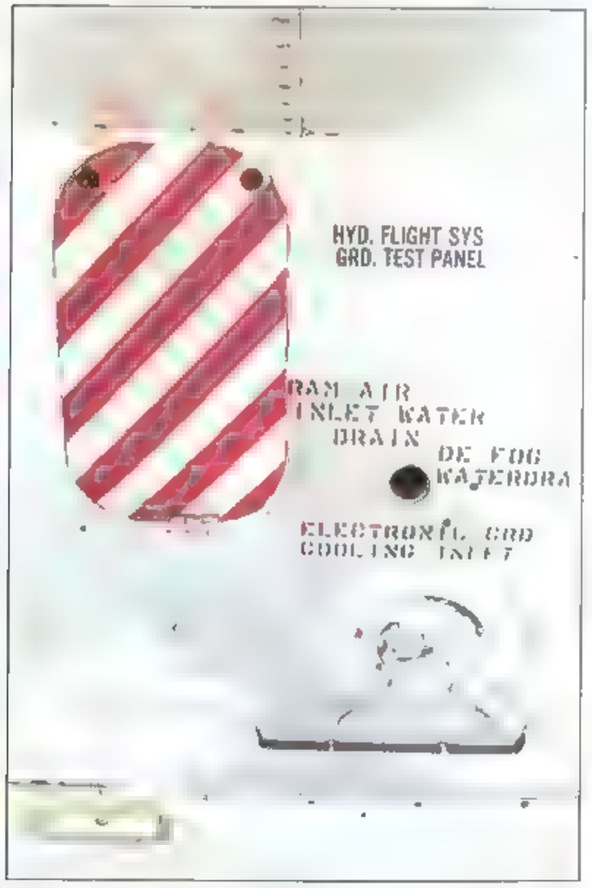
A side view of one of the VHF/UHF blade antennas that are located on the lower fuselage of the aircraft. *(Ken Neubeck)*

A close-up view of the trailing wire antenna assembly that is used during flight. A red plastic ball is at the end of the assembly. *(John A. Gourley III)*

A rear view of this cooling system with the cover removed shows a fan on the right, along with the duct on the left and a vent from the cabin on the fuselage. *(John A. Gourley III)*



Because of the significant amount of electronics packed into the cabin of the E-2C and the amount of heat generated by this equipment, additional ram-air cooling is needed. On the right side of the fuselage is a ram air vent that is used for such cooling *(Ken Neubeck)*

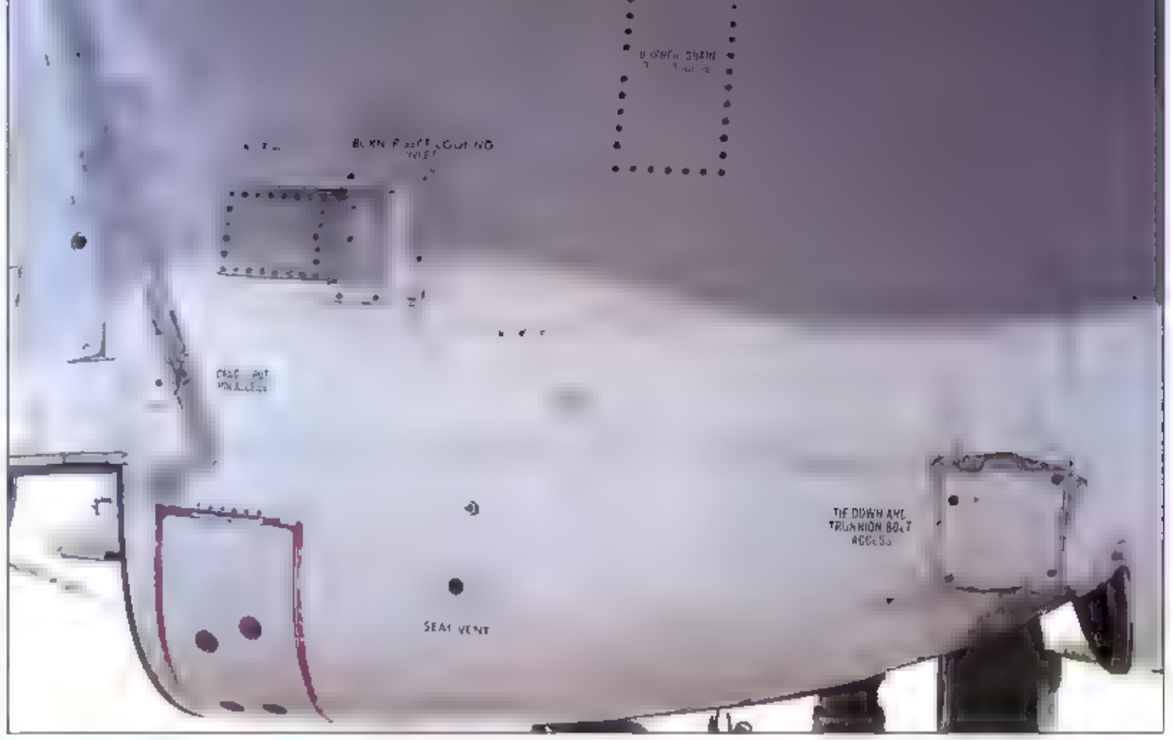


The access doors for various ground tests, such as the hydraulic flight system ground test, are shown here. *(Ken Neubeck)*

The access doors (shown in the photograph to the left) are open, revealing connectors for filling the system *(Ken Neubeck)*

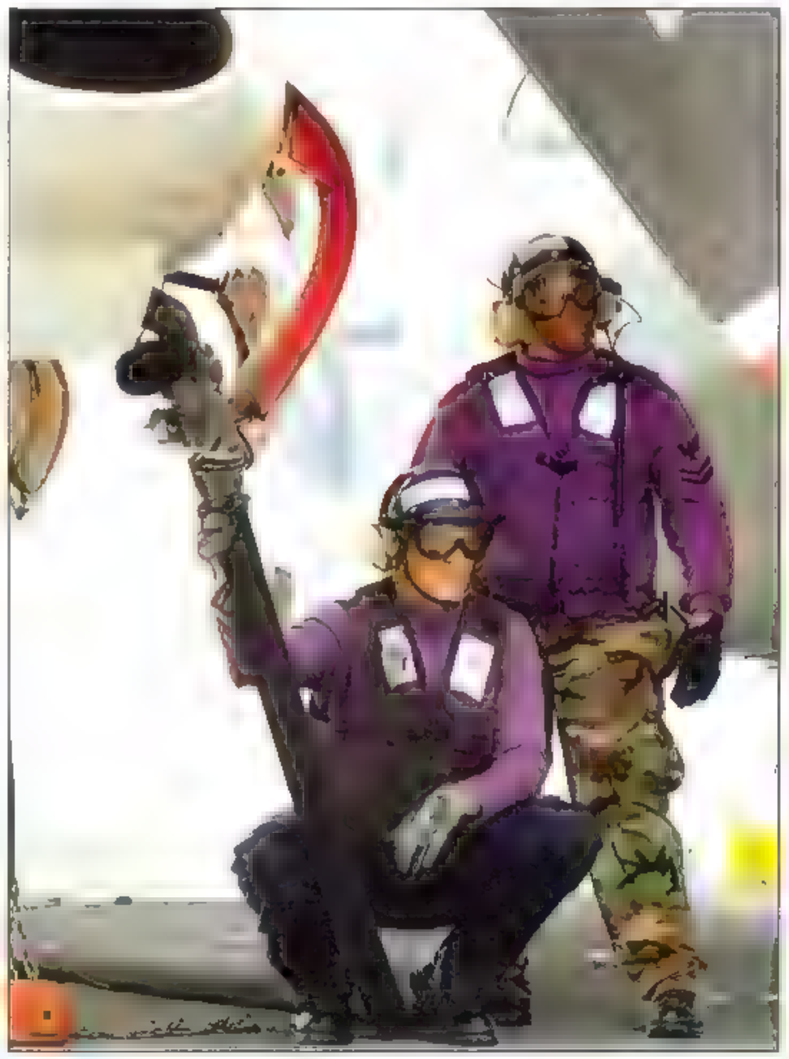
Below the ram air structure are a number of access doors and a safety vent for cabin pressure *(Ken Neubeck)*

Refueling of the E-2C is performed on the ground by means of an access door that is located on the inside of the right engine pod, which can be seen in the photo on the near right. The photo on the far right shows the left side of the right engine pod. In this photo, a number of ground maintenance access doors can be seen that are located throughout the pod, including the ground refueling access panel, which is located on the lower part of the pod, near the main landing gear door. The door is outlined with red paint but otherwise has no labeling. The E-2C uses standard JP-4 or JP-5 fuel, and the fuel tanks are nonsealing tanks that are situated inside the wing between the two engine pods of the aircraft. *(Ken Neubeck)*



The refueling panel has four quick-release latches that are located in a nonsymmetrical pattern on the panel. *(Ken Neubeck)*

A small control panel for refueling is located above the refueling port. *(Ken Neubeck)*



Sailors from the *Harry S. Truman* refuel a Hawkeye during exercises in October 2005. *(U.S. Navy Photo by Airman Ricardo J. Reyes)*

E-2 Hawkeyes in Color

The E-2A models were modified into B models, which would be in service until the 1970s when the E-2C came into service. External features of the E-2B model that would later be changed in the E-2C model were the nose section and the ram air inlet on the top of the fuselage. This E-2A, 149817/RR-709, was assigned to VAW-11 in 1965.

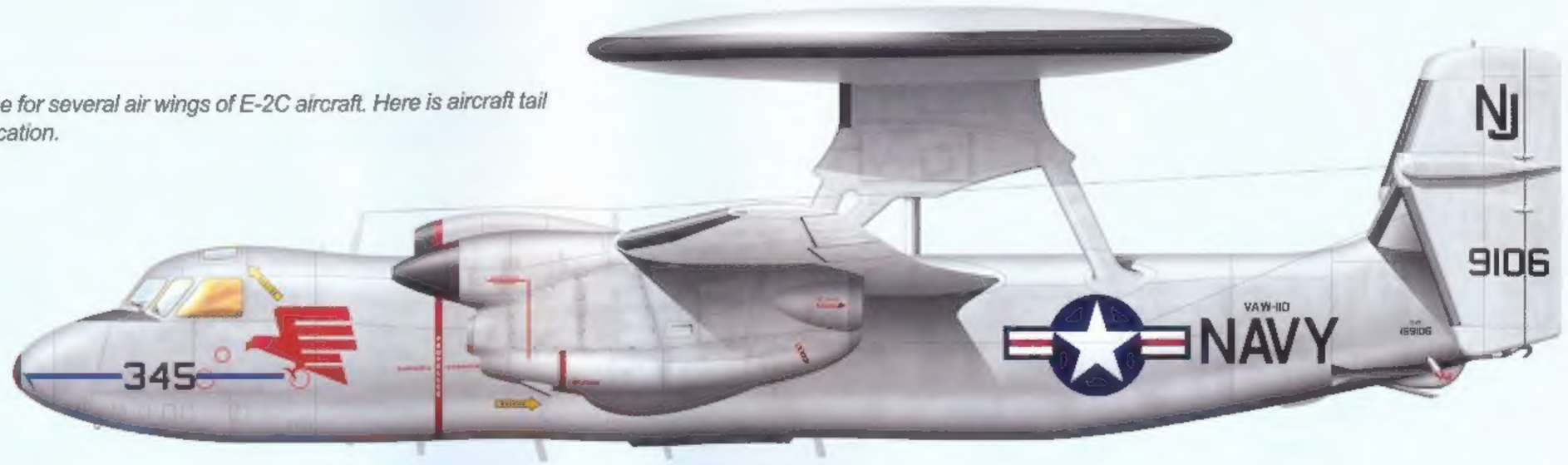
The E-2C aircraft has been active in several recent conflicts, particularly in the Persian Gulf region up to the present time with Operation Iraqi Freedom. This is one of several E-2C aircraft that has provided surveillance for the U.S. armed forces in the region.

Norfolk, Virginia, has been the shore base for several air wings of E-2C aircraft. Here is aircraft tail number 1782 of VAW-124, which is based out of Norfolk.

The U.S. Coast Guard has operated E-2C aircraft in patrolling the U.S. coasts. This E-2C aircraft, tail number 3501, was assigned to this duty when it suffered a fire onboard and crashed in Puerto Rico in August 1990. A memorial was dedicated to this crew at Coast Guard Air Station Saint Augustine, Florida, where the aircraft was based.

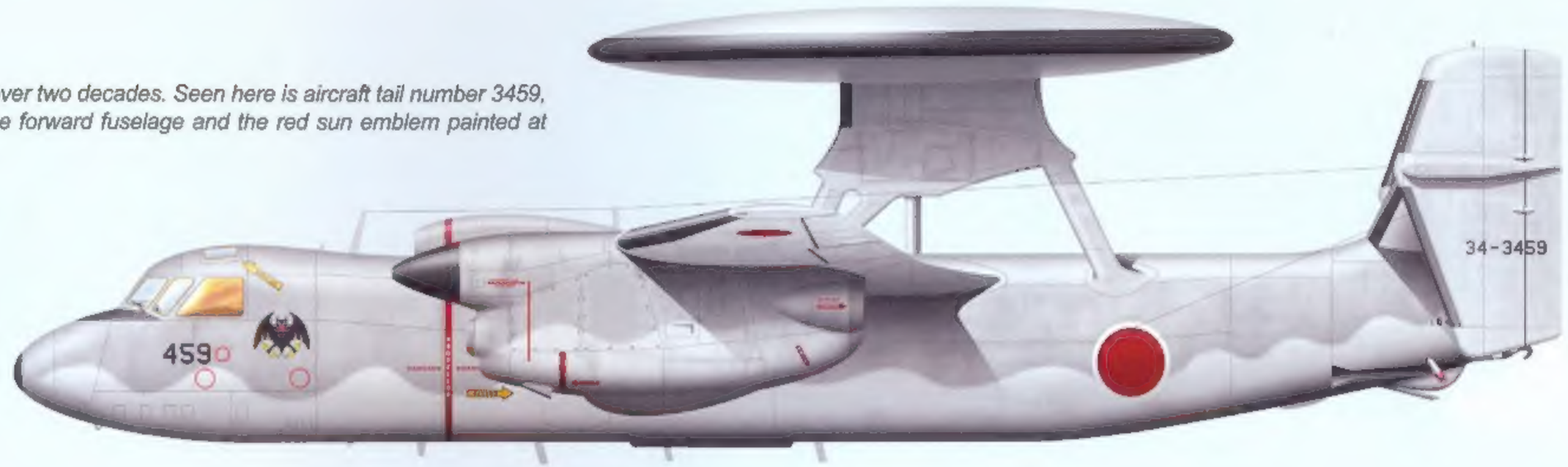
Lightning is a common motif for nose art on the E-2C such as displayed on this aircraft, tail number 0722, of Carrier Airborne Early Warning Squadron 78 (VAW-78), "The Fighting Escargots," based out of Norfolk.

Miramar, California, is also a major shore base for several air wings of E-2C aircraft. Here is aircraft tail number 9106 of VAW-110 based from this location.



The French navy has operated E-2C aircraft in its fleet. The nose art for the aircraft is quite detailed, such as on this aircraft, in comparison with other E-2C aircraft in service elsewhere in the world.

Japan has operated the E-2C Hawkeye for over two decades. Seen here is aircraft tail number 3459, which has a bat wing insignia located on the forward fuselage and the red sun emblem painted at midfuselage of the aircraft.



The Mexican Navy is a recent foreign operator of the Hawkeye. This particular E-2C, tail number AMP-102, has the Mexican flag painted on the outside tail section and the Mexican navy emblem painted on the rear fuselage.

An E-2C Hawkeye assigned to the "Greyhawks" of Carrier Airborne Early Warning Squadron 120 (VAW-120) launches from the flight deck aboard the *Nimitz*-class aircraft carrier *Theodore Roosevelt*, which is conducting carrier qualifications off the coast of Virginia. *(U.S. Navy Photo by Mass Communication Specialist 3rd Class Christopher Hall)*

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